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COLLEGE OF PHARMACY OF THE CITY OF NEW YORK

CONTENTS

Urine Analysis by the Pharmacist I
GEORGE C. DIEKMAN, Ph.G., M.D.

Microscopical Characteristics of Powdered Hyoscyamus and Belladonna Leaf 8
SMITH ELY JELLIFFE, M.D., Ph.D.

Abstracts II-12

Bibliography 12

Editorials 13-14

Volume VII.
Fanatics and Legislation.

Alumni, College and Class Notes 15-22

Fraternity Notes 22



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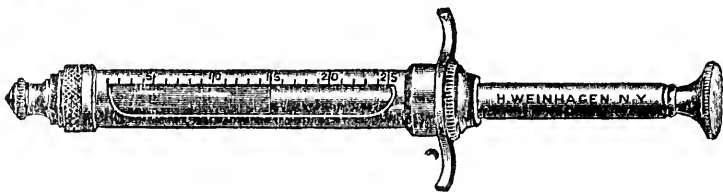
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No. 1.

Urine Analysis by the Pharmacist.

BY GEORGE C. DIEKMAN, PH.G., M.D.

(Continued from December Number.)

PART TEN.

UREA.—Continued.

2. Methods by means of which urea is estimated irrespective of other nitrogenous constituents of urine.

A. Method of Bunsen. This in outline is as follows :

Urine together with ammoniacal solution of barium chloride is heated in a sealed tube at a temperature of 220–240°C. for 3–4 hours. The resulting carbon dioxide, in the form of barium carbonate is then estimated, and from this, the urea. According to Pflüger and Boland, the method is far from exact, an error of 10% being quite possible. Salkowski employed a saturated solution of barium chloride, containing in each liter 15–20cc. of a 30% sodium hydrate solution, estimating the ammonia thus formed, as well as the carbon dioxide.

(a) Modification of Pflüger, Bohland and Bleibtreu.

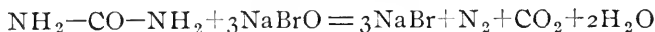
This consists in first treating urine with phospho-molybdic acid, when all substances, other than urea, and which are capable of yielding, upon decomposition, ammonia and carbon dioxide, are precipitated. This method yields fairly accurate results.

(b) Modification of Mörner and Sjöqvist.

These observers found that under certain conditions phospho-molybdic acid also precipitates urea, at least in part. They recommend a method which obviates the necessity of estimating the preformed ammonia.

B. Method of Knop-Hüfner: This is based on the following principle:

Urea is decomposed when treated with an alkaline solution of sodium hypobromite into nitrogen, carbon dioxide and water, as follows:



The carbon dioxide is fixed by the excess of alkali present, and the nitrogen is collected and measured in a properly constructed apparatus. One gramme of urea furnishes theoretically 370 cc. of nitrogen at 0°C. and under a pressure of 760 mm.

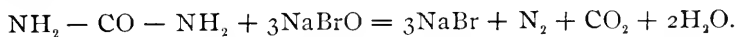
C. Method of E. Riegler: This method is based on the fact as already shown by Gréchant, Boymont, that urea when treated with Millon's reagent is decomposed into equal volumes of carbon dioxide and nitrogen. The gases are collected and from their combined volume the quantity of urea is calculated. Riegler employs for the execution of his method a specially constructed apparatus, which is accompanied by tables, which show the quantity of urea for any given volume of gas at any certain temperature and pressure. The method is a rapid one and fairly accurate. It is not as expensive as that of Knop Hüfner, 100 cubic centimeters of the reagent sufficing for about 40 determinations. The reagent does not decompose upon standing, as does the alkaline hypobromite solution, this, of course, being a further advantage. The necessity of purchasing a specially constructed apparatus is, however, a serious disadvantage.

Most of these methods are not applicable for general purposes, as their execution requires considerable skill and practice, otherwise the results obtained will be far from accurate. On this account the methods of Hörner and Sjöquist, and Knop-Hüfner only will receive attention here.

1. Method of Mörner and Sjöquist: 5 cc. of urine together with 5 cc. of a saturated solution of barium chloride, in which 5 per cent. of barium hydrate is dissolved, are placed in a flask. To this mixture is added 100 cc. of a mixture of 2 parts of 96 per cent. alcohol, and 1 part of ether. The flask is then stoppered and set aside for a period of 12 hours. The object of this procedure is to cause a precipitation of all the nitrogenous constituents of urine except urea. After standing for the required time, the precipitate which has formed is collected in a filter, and washed with alcohol and ether, mixed in proportion as above indicated. The filtrate is concentrated at a temperature not exceeding 60°C. to a volume of 20-25 cc. A little water and calcined magnesia are now added and the concentration continued, for the purpose of removing preformed ammonia, until the vapors given off are no longer alkaline in reaction. The concentrated liquid

is then removed to a retort, being very careful to remove every portion of it. From this point on the operation is conducted in the same manner as in the Kjeldahl method for the determination of total nitrogen.

2. Method of Knop-Hüfner: For the execution of this method a great many modifications have been proposed, and many different apparatuses are employed (ureometers, azotometers, etc.). These are all based on the same principle as the original Hüfner apparatus, and it will not be necessary to describe any of them in detail, as a full description and directions for use usually accompany each apparatus. The Knop-Hüfner method is not absolutely accurate, but recommends itself on account of the ease and rapidity with which it may be executed. It is of particular value in such cases where great exactitude is not a requisite. The method depends upon the fact that urea when brought in contact with sodium hypobromite (NaBrO) is decomposed into water, carbon dioxide and nitrogen as follows:



This decomposition takes place most readily in the presence of a concentrated alkaline solution. It is necessary to employ a strong alkaline solution, as the loss of nitrogen is in inverse ratio to the strength of said solution. The carbon dioxide which is liberated is absorbed by the excess of alkali and the volume of nitrogen gas given off is measured.

The reagent required is prepared as follows (Knop): 50 grammes of sodium hydrate are dissolved in 125 cc. of distilled water. To this solution 12.5 cc. of bromine are added at one time, keeping the mixture cool. The reagent should be kept in a cool, dark place, but even then decomposes in a few days. It is preferably made fresh when wanted for use.

This quantity of reagent (175 gm. of NaOH solution and 12.5 cc. of bromine) is required when the Hüfner apparatus is used.

Conditions required: In order to insure the best results the following must be observed:

1. The sample of urine employed should contain 1 % of urea. A more concentrated sample should be diluted by adding the proper quantity of distilled water to reduce it to 1 %.
2. Before placing the urine in the apparatus, the part which received this liquid should be perfectly dry. This may be accomplished by rinsing first with alcohol and then with ether.
3. The sample of urine employed should be free from albumin and glucose.

The apparatus employed is known as the Hüfner ureometer. It may be briefly described as follows (Fig. 1):

A glass cylinder (*B*) having a capacity of about 100 cc., and which is contracted at each end, is connected with a small bulb (*A*), having a

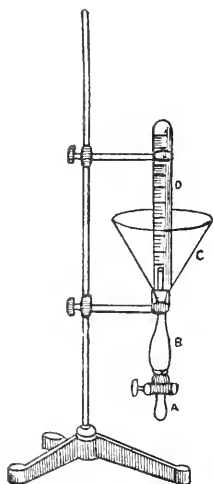


FIG. 1

capacity of about 5 cc., by means of a stopcock having a wide bore. The capacity of *A* inclusive of that of the stopcock bore must be accurately determined. This may be done by introducing water by means of a burette or pipette, noting the volume introduced. The total capacity should not exceed 6 cc. The upper contracted end of the tube *B* is connected with the neck of a funnel-like vessel (*C*), extending several centimeters into this. It may be thus kept in place by means of a perforated cork stopper. The eudiometer (*D*) when in position must be directly above the upper contracted end of *B*, and is fastened in this position by means of a clamp. It should have a capacity of 50-100 cc. divided into 1/10 cc.

The method is executed as follows: The lower bulb of the apparatus if filled with the sample of urine, preferably diluted with an equal volume of distilled water, noting, of course, the exact quantity of urine employed. When thus filled the liquid should extend up to the distal end of the bore in the stopcock. Care must be taken that no urine adheres to *B*. This may be avoided by introducing the liquid by means of a pipette. The stopcock is now closed and the tube *B* together with most of the vessel *C* are filled with Knop's hypobromite solution. Next fill the eudiometer with the same reagent, close with thumb, and invert over the contracted end of *B*, taking care that no air enters, and fasten in position with clamp. Now open the stopcock and note the evolution of gas resulting from the reaction between the urea and the reagent. The carbon dioxide liberated is absorbed by the excess of alkali, while the nitrogen collects in the eudiometer, displacing in this a volume of liquid equal to its own volume. In about one-half hour the reaction will have terminated, and the volume of gas may now be read off. Lowering the eudiometer into a cylinder of cold water, which has previously been boiled to expel gases, in such a manner that the liquid in the eudiometer and that in the cylinder are on the same level, will permit a most correct reading. It is furthermore necessary to note the barometric pressure and temperature. From the volume of nitrogen so obtained, its weight is determined, and from this the weight of urea. The weight of nitrogen is determined after the following formula:

$$g = \frac{V. (b - b')}{760 (1 + 0.003665. t)} 0.0012566.$$

g = weight of nitrogen expressed in grammes.

V = volume of liberated nitrogen expressed in cubic centimeters.

t = temperature.

b = barometric pressure reduced to 0°C .

b' = tension of aqueous vapor at t .

0.0012566 = weight of one cubic centimeter of nitrogen at 0°C . and 760 mm. pressure.

The method as outlined above is rather expensive and not well adapted for ordinary work. Various modifications, which however are all based on the same principle, have therefore been devised.

Among the more important modifications the following may be mentioned :

A. Modification of Doremus : For the execution of this the Doremus ureometer is employed. Fig. 2 illustrates the apparatus. The reagent employed should in each instance be freshly prepared. Its composition is as follows: A stock solution of caustic soda, 100 grammes to 250 cc. of water. When wanted for use 10 cc. of this solution are measured off, and 1 cc. of bromine added. The bromine is measured off by means of a nipple-pipette which accompanies each apparatus. Care must be taken in handling the bromine since it gives off irritating fumes. When dissolved the solution is diluted with an equal volume of water and is ready for use.

The bulb of the instrument is filled with the reagent and by inclining the tube the long arm is filled to the neck of the bulb. 1 cc. of the sample of urine is measured off in the nipple-pipette and slowly discharged into the long arm containing the hypobromite solution taking care not to force any air into the apparatus. Rapid decomposition of the urea takes place with evolution of nitrogen gas, which rises in the long arm of the instrument, displacing the solution which flows out into the bulb. The

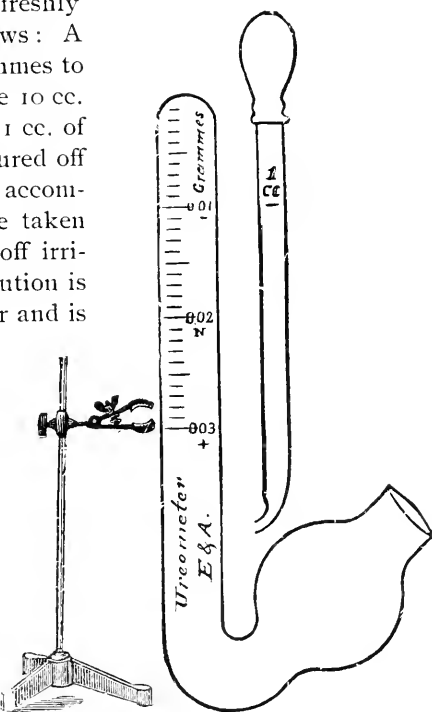


FIG. 2.

decomposition of the urea is complete in about 15 minutes, when the volume of nitrogen gas may be read off, indicating at once the quantity of urea in the volume of urine tested. The instrument, according to its graduation, indicates fractions of a gramme to the cubic centimeter, from 0.01 to 0.03 cm., or the number of grains of urea per fluid ounce of urine. It also indicates by the signs + and - whether urea is present in increased

or diminished quantity. If it is desirable to read percentage of urea, the decimal point is removed two figures to the right : thus 0.01 gm. to the cc., would read 1 per cent. of urea. The normal quantity of urea in urine is about 0.02 gm. per cc. or 2 per cent. Lowering the ureometer in a vessel of water until the water and hypobromite solution inside and out of the graduated limb are on a level, will give a more correct reading. The instrument* is graduated for a temperature of 65° F., and is designed for the rapid approximate estimation of urea. It yields, when the test is properly carried out, results which closely approximate those obtained by other methods.

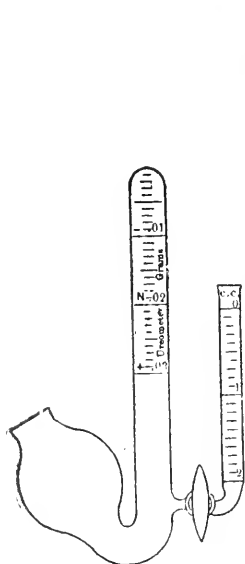


FIG. 3.

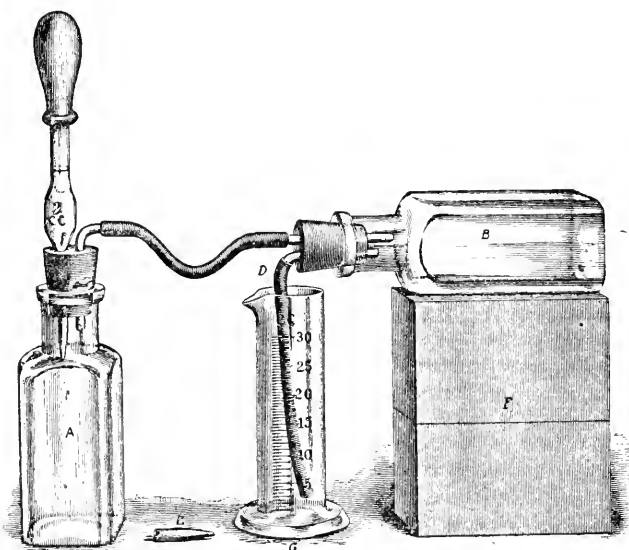


FIG. 4.

B. Hind's modification of the Doremus Ureometer (Fig. 3).

This instrument furnished more exact results than the original. The 1 cc. of urine required for the test is delivered with great accuracy, no gas escaping by way of the bulb. The writer has found the instrument to give results which were very satisfactory and would recommend its use.

C. Squibbs' Urea Apparatus (Fig. 4).

This apparatus is intended for the approximate estimation of urea. A number of reagents may be used with this apparatus, the object in each case being the decomposition of the urea of urine. Briefly, these are the following :

* The apparatus, properly graduated, may be obtained from Eimer and Amend, New York City.

1. Solution of chlorinated soda of the U. S. Pharmacopœia, 1840-1870, inclusive.
2. An extemporaneous solution of chlorinated soda, prepared according to directions accompanying the apparatus.
3. Solution of chlorinated lime.
4. Solution of sodium hypobromite applied by the improved process of Dr. Charles Rice.

No description of the apparatus, nor any directions for using, will be given here, as this information is exhaustively furnished with each apparatus. Each apparatus is also accompanied by full directions for the preparation of reagents employed. By carefully following directions, acceptable results may be obtained.

FOWLER'S DIFFERENTIAL DENSITY METHOD.

This method devised by Dr. G. B. Fowler, of New York, answers fairly well for approximate results and is easy of application. It is based on the difference in gravity of urine before and after the decomposition of its urea. The reagent employed is Labarraque's solution. Each degree of density lost corresponds to 0.77%, or about $3\frac{1}{2}$ grains for each fluid ounce. The method is executed as follows: To one volume of urine, add 7 volumes of Labarraque's solution. Decomposition of urea begins to take place at once, and after a few hours all the nitrogen has escaped. The specific gravity of the mixture is now carefully taken, preferably by the pyknometer. The specific gravity of the original sample of urine and of the Labarraque's solution must also be taken in the same careful manner. The density should be carried out to the third decimal. In order to reduce the density of the decomposed and diluted urine, to its normal undiluted condition, multiply the specific gravity of Labarraque's solution by 7, add the specific gravity of the original sample of urine, and divide the product by 8. From the specific gravity before decomposition, subtract that obtained after decomposition, and multiply the difference by $3\frac{1}{2}$, giving as result the number of grains per fluid ounce, or by 0.77 giving the per cent. The method cannot be recommended where accuracy is required, but will answer where only approximate results are desired.

To be continued.

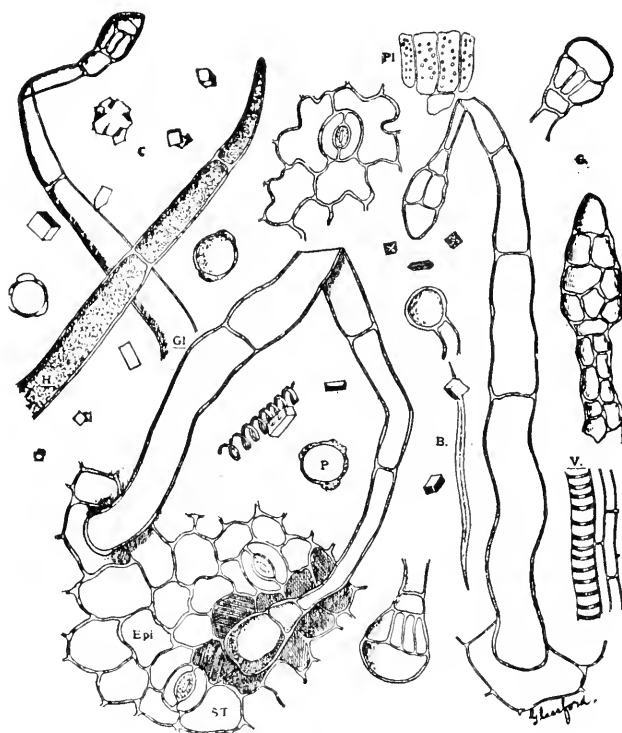
Microscopical Characteristics of Powdered Hyoscyamus and Belladonna Leaf.

BY SMITH ELY JELLIFFE, M.D., PH.D.

HYOSCYAMUS.

Microscopically the following structures are to be distinguished: parenchyma, crystals, epidermis cells, hairs and fibro-vascular elements.

The parenchyma is thin-walled, simple and usually rich in chlorophyl, often brownish in general color. Palisade cells, from the upper side only



Hyoscyamus Leaf in Powder.—Epi, epidermal cells with St, stomata and Gl, glandular hairs; G, glands from the tips of the hairs; H, simple multicellular hair; Pl, palisade tissue, rich in chlorophyl; C, crystals of at least four shapes; V, vessels from the ribs and petioles: these from the petioles may be reticulated; B, fiber from rib; P, pollen grains occasionally found.

are in single rows, rarely double, and these usually are connected at their lower ends to the funnel-shaped cells of the mesophyl.

In the irregular mesophyl cells, numerous crystals of calcium oxalate

are to be found. These are very various—column-shaped, dice-shaped, cuboidal and octahedral forms being found. Sometimes twin crystals are seen.

The hairs are very characteristic; both simple and glandular types abound. Most of them are multicellular. The simple hairs end in straight non-secreting points, while the others have many-celled heads which contain resin-like secretions. The simple hairs vary greatly in length and diameter. In length they often measure from 100–400 micra, and often average between 20 and 50 micra at the base. The wall is usually smooth. The glandular hairs may be even larger than the simple ones.

Epidermis cells are smooth, mostly wavy in outline, save over the midrib, where they are elongated and pointed.

Stomata are frequent, being found on both surfaces. They average about 40 micra in their longest diameter and about 30 in breadth; the *neben-zellen* average three to four, though there may be at times as many as six.

Fibers are not common. Fragments of spiral vessels are not infrequent. Occasionally pollen grains may be found in the powder.

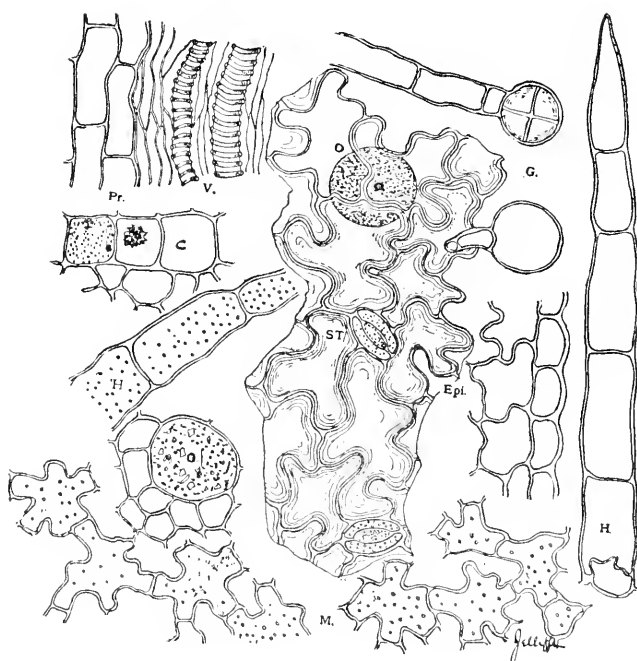
According to Tschirch the crystals are diagnostic alone and serve as a means of differentiating this leaf from other leaves of the narcotic group. Thus *hyoscyamus* has at least four kinds of crystals; *stramonium* has crystal glands; *belladonna*, crystal sand, and *digitalis*, no crystals.

BELLADONNA LEAF.

General morphology of the leaf.—The leaves are ovate with sharpened apex, narrowed at the base, from 20 to 30 cm. in length and about 10 to 12 cm. broad. The margins are entire and the surface is smooth; here and there a few hairs may be seen on the veins of the under side and also on the petiole. In this latter situation they are more abundant and larger. The younger leaves are more abundantly provided with hairs, and these also have small-stalked glandular cells. The upper surface is dark-green, the lower lighter, grayish-green, showing whitish spots; these locate the cells containing the crystal sand of oxalate of calcium.

Anatomy of the leaf.—Both upper and lower surfaces of the leaf show stomata. These are oval. A cross section shows the epidermis, with slightly thickened outer cutinized wall; palisade tissues on the upper side only in a single row filled with chlorophyl grains; the mesophyl parenchyma with cells containing the crystal sand and cross sections of the fibro-vascular bundles, which are more prominent in the lower parts of the leaf.

Powder.—The powder is brownish to dark green. The most prominent features of a No. 60 powder are the epidermis cells. Other elements are



Belladonna Leaf in Powder —Epi, epidermis, to right in transverse section ; to left, superficial view, showing contorted and wavy cell outlines and the wavy markings of the epidermal cells which are quite characteristic; St, stomata; Hair, simple multicellular hairs; G, glands and glandular hairs; M, parenchymatic tissue of the mesophyl; Pr, parenchyma near the veins: vessels of the ribs and delicate fiber like elements; C, to left, cell filled with crystal sand; to right, rosette shaped crystal; these last being rare; O, parenchymatic cell with crystal sand.

hairs, mesophyl parenchyma, parenchyma of the fibro-vascular bundles, vessels, crystal sand and crystals.

The epidermal cells are characteristic, they are very wavy and show very delicate wavy markings. The stomata are slightly elongated and have from three to four neighboring cells about them. The mesophyl parenchyma varies. It is in some places iso-diametric, in others stellate. Large iso-diametric cells imbedded in the mesophyl contain fine crystal sand of calcium oxalate. Larger calcium oxalate crystals of the rosette form occasionally are formed, but these are inconspicuous in the powder.

The hairs are not diagnostic. They are few in number and come from young leaves, on the petioles or under sides of the chief veins in the older leaves. They are usually simple multicellular hairs. Small glandular hairs with short pedicels are also found.

The vessels and fibers are few and not characteristic.—*Drug. Cir.*, April, 1899.

Abstracts.

The Sterilization of Drinking Water. Hygiene is on the eve of discovering an agent by which, says the Roman correspondent of the *Lancet*, the sterilization of drinking water may be effected thoroughly, quickly and economically. The tincture of iodine has been recommended, and certainly succeeds when the bulk of water is not great, and good results have been obtained in the well-known establishment at Lille for "the industrial sterilization of drinking water with ozone." The *Rivista d'Igiene* of Turin, however, has just indicated a "more excellent way" than either of these, to wit, "the sterilization of water by means of the peroxide of chlorine," which, it says, has already obtained a unanimous vote in its favor from the Consultative Committee of Public Hygiene in France. Peroxide of chlorine is a powerful and energetic oxidant, while its action as a bactericide is such that less than three grammes are sufficient to sterilize completely one cubic meter of water—even to destroy the "spora carbonchiosa." "This new Bergé process," according to the *Rivista*, "is very economical, the sterilization of a cubic meter of water costing less than half a centime." Put to the test at Ostend and at Middelkerke, it has yielded quite satisfactory results. One objection, it is true, has been made to it—its action is alleged to be efficacious only in the case of "drinking water not very impure." Further experiment must give the reply to this; meanwhile Professor Henri Bergé (lecturer on chemical technology at the Brussels Polytechnic School) and M. Albert Bergé have succeeded in eliminating all danger of explosion in the preparation of peroxide of chlorine, which they obtain by treating at about 107° C. chlorate of potash with sulphuric acid. Moreover, in the Bergé process the water, after having been treated with peroxide of chlorine, must be passed over coke, which detains whatever trace of the oxide has remained in it. Every possible source of mischief is thus eliminated, and, as the *Rivista* believes (while not accepting the process as free from all objection), we are now in presence of a sterilizing agent which promises what public hygiene has long desiderated—a perfectly pure, innocuous drinking water.

Chemistry of Gall-stones. In contradiction of the theories of Naunyn, the author, Thudichum (*Virch. Arch. Bk.*, 156, p. 384) declares, as a result of his investigations, that bilirubin is not a constituent of normal human bile. The coloring matter of human gall-stones is bilifascins. The gall-stones of both men and animals, as a matter of fact, contain ingredients which are only found in the bile after its decomposition. He further denies that the mucous glands of the gall-bladder participate in the production of gall-stones.

New Guajacol Preparation. Creosote and guajacol are possessed of so many disadvantages that modern therapy has been led to employ such substitutes as benzozol, duotal, etc. These, being insoluble, reach the foci in too attenuated a form to develop the proper antitoxic effect. A. Einhorn (*Minch. med. Woch.*, Jan. 2, 1900) finds diethyl glyccoll guajacol to be a soluble salt which promises to replace creosote in that it lacks their disadvantages. Experiments on animals have shown that this preparation is non-poisonous and non-irritating when employed in moderate concentration. Given in daily doses of 3-12 gms. (45-180 grains) in wafers or by hypodermic injection, no deleterious effects on the system were noted.

In addition to pulmonary tuberculosis, encouraging results have been achieved in tuberculous diarrheas and locally in ozena, carcinomatous ulcers, stomatitis, chronic conjunctivitis, and as irrigations in bladder inflammations.

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NOTE.—Any of the above books can be had at G. A. Stechert's, 9 East 16th St., N.Y.

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Volume VII.

WITH this, the January number, the JOURNAL OF PHARMACOLOGY opens its books for another year of progress. Little by little it has worked itself forward and upward, until now we find it climbing the seventh round of the ladder of time and journalistic success. As time rolls on it is ever endearing itself to its readers, and monthly it is looked forward to with interest.

It has, through the medium of the class notes, brought together, at least in thought and memory, classmates of yore, who otherwise might never hear of each other. It has looked after the interest of the undergraduates who are with us and who we hope will soon become members of our Association.

It has published interesting and instructive papers touching upon the various branches which go to make up the educational and practical sides of Pharmacy. Last but not least, in fact, greatest of all, it has fought with untiring energy for the PREREQUISITE-GRADUATE CLAUSE.

Volume VII. will not be amiss, but all these features will be retained and no amount of effort or labor will be spared in making and keeping it the par excellence of alumni journals.

From time to time there appears in the local press many items of interest regarding pharmacy and pharmacists. When we read them, often they do not appeal to us in any way, and little do we think of how much interest they might be to others. It has been suggested that a book containing clippings from the newspapers be kept in the Alumni Room.

This suggestion has met with such common favor that the editor desires to announce that such a book has been prepared, and urges the readers of the JOURNAL to send in any item appertaining to pharmacy or pharmacists; these items to be other than pharmaceutical press notices.

Fanatics and Legislation.

IN recognizing the fact that the blood of the martyrs sprinkles the pathway of sentimentalists as well as reformers and that the spirit of fanaticism only grows when actively opposed, it might seem the wiser plan to pass over in utter silence the recent endeavor of the anti-vivisection cranks to force the District of Columbia into the shackles of its prejudiced ideas.

The matter is of interest to pharmacists because as scientific men they are deeply concerned with pharmacologic research; and the high-handed measures of the anti-vivisection factions would entirely stop all forward work in the scientific investigation of the physiological action of drugs. This country might better, as far as its medicine and pharmacy are concerned, go back to the Middle Ages with its crudest superstitions, if the views of the anti-vivisectionists should obtain for any large number of people. As men interested in the broader view of humanity, we appeal to brother pharmacists to put their shoulder to this rock of obstruction and roll down a protest that will crush this one-sided, fanatical point of view. Human life and human happiness are in the balance against a maudlin sentiment in behalf of cats, dogs, guinea-pigs, rabbits and mice.

These people that pet one cat and drown its kittens, that trap mice and eat hares; do they imagine that it is a species of ghoulish amusement that leads men to experiment on lower animals for the good of man? They are not capable of appreciating that, among other things, there are many drugs whose chemical analysis gives but little clue to their physiological relations nor does such analysis afford any help in the way of standardization of such drugs as ergot, for example. But a certain definite dose fed to one of the lower animals proves graphically what is to be expected for man and thus puts in the hands of the physician some clue to the use of many drugs concerning which they otherwise would be in the dark.

The investigation of new drugs cannot go on in a proper manner without the use of the lower animals, and it certainly is wiser and more humane to end the life of a guinea-pig rather than that of a man, in order that benefit to mankind may result.

The editor desires to announce that a full and complete index for Volume VII. will appear as a supplement with the February number.

Also, that in making up the Volume VI, attention is called to an error in dates, viz., the November, 1899, number bears a cover dated December, 1899.

Alumni, College and Class Notes.

CONTRIBUTORS.

Alumni Association, WM. A. HOBURG, Jr., Ph.G., 115 West 68th St., N. Y.
 Alumni Notes, Socials, etc., and Classes prior to 1893, . . CHAS. S. ERB, 121 Amsterdam Ave., N. Y.
 Bibliography, ADOLPH HENNING, Ph.G., 68 William St., N. Y.
 Class '93, EUGENE F. LOHR, Ph.G., 508 Marcy Ave., Brooklyn, N. Y.
 Class '94, FRANK N. POND, 226 Ninth Ave., N. Y.
 Class '95, GEO. J. DURR, Ph.G., Randalls Island, N. Y.
 Class '96, CHAS. G. H. GERKEN, Phar D., 169 S. 4th St., Brooklyn, N. Y.
 Class '97, E. A. MEINECKE, Ph.G., 14 Platt St., N. Y.
 Class '98, T. B. FURNIVAL, Ph.G., 115 West 68th St., N. Y.
 Class '99, THEODORE E. MEYERS, Dorranceton, Pa.
 Class 1900, ROBERT B. LIVINGSTON, 115 West 68th St., N. Y.
 Class 1901, ABERT C. THOMPSON, 115 West 68th St., N. Y.
 Post Grad. 1900, FANNY A. BLAN, 115 West 68th St., N. Y.
 Legal Notes, H. A. HEROLD, 108 Fulton St., N. Y.

Alumni Association Meeting.

Meeting called to order in Alumni Room, on January 10th, 1900, at 9 o'clock P. M., by President C. S. Erb. There were present Henning, '76; Hohenthal, '81; C. S. Erb, '86; Searles, '86; Diekman, '88; Borggreve, '92; Hoburg, '93; Kirk, '94; Ferguson, '95; Dauscha, '95; Gies, '95; Westheim, '96; Shears, '97, and Meinecke, '97.

Minutes of last regular meeting read, and on motion accepted and adopted as read.

Report of Treasurer, Dr. G. C. Diekman, received and accepted.

Report of Entertainment Committee, by Dr. R. Gies, of progress, received and accepted.

Report of Papers and Queries Committee by Dr. H. B. Ferguson; unable to secure a lecturer this month, and no hope of one for next month; report received and accepted.

Report of Ball Committee, by F. Borggreve, of progress, received and accepted.

Bills to the amount of \$9.25 were presented for payment, and, on being found correct, were ordered to be paid.

Presentation of picture of "Naval Apothecaries," by Dr. H. B. Ferguson; accepted with the thanks of the Association, and referred to Picture Hanging Committee with power.

Mr. H. Levinsohn, Class '99, of 51 East Houston Street, New York, was elected to membership in this Association.

Motion to adjourn, carried.

Respectfully submitted,

WM. A. HOBURG, JR.,
Secretary.

College Notes.

The College is indebted to Mr. Edward Kemp, its genial President, for a further addition to its already magnificent set of apparatus; it is all fully up to date, and no doubt makes our College the best equipped institution of its kind in the United States. His donations come close to the thousand dollar mark, and consist of everything most useful in helping the young as well as the more mature mind to delve into the mysteries of physical and electrical work.

Microscopy, too, comes in for its share of the munificence of the donor. The microscopes have all been brought up to the highest possible standard; immersion lenses,

microtomes and other appliances have been added to the Department of Pharmacognosy.

All this Mr. Kemp has done quietly and unassumingly, deserving the unstinted praise and thanks which were freely and unanimously accorded him at a regular meeting of the C. P. C. N. Y.

A "special lecture" is to be delivered by Professor Coblentz to the members of the College and of the Alumni, explaining the various uses to which the different pieces of apparatus are put in lecturing to the classes of the C. P. C. N. Y.

The date has been set as February 22, 1900, at 8 P. M., in the lecture room.

Alumni Social.

Any of our Alumni members or their friends who thought that interest and attendance at our receptions were beginning to wane will be agreeably surprised to learn that the last reception was the best from every standpoint that the Association has ever held. The library and hall of the college were comfortably filled with the members of the association and their lady and gentlemen friends. Professor Mandelbaum officiated at the piano and the kind and quality of the music he rendered was even better than usual, which, as you all know, is saying a great deal for the genial "Mandy."

Among those present I noticed the Misses Hoburg, Wehl, F. Merritt, M. Stage, K. Stage, R. Merritt, Wolff, Conners, Phoebe, Bjorkwall, A. Humphries, D. Humphries, H. White, M. White, Groome, Selwood, and Mrs. Gies; also Messrs. Furnival, Palmer, Kirk, Henderich, Decker, Jorgenson, McGahen, McManus, Hoburg, Erb, Meinecke and Drs. Bjorkwall, Diekman, H. B. Ferguson and Gies.

In connection with the foregoing let me add that the committee having the reception in charge, does not propose to allow the interest to subside, and promises for the next reception (Time: Wednesday, February 21, 1900; Place: College library at 8:30 P. M.) an evening of rare enjoyment, and several entertaining surprises, as already announced in the December number.

Finally let me impress upon you not to forget the date as above stated, and as a parting piece of advice to the Alumni members and their friends let me once more add "Come one, come all, and don't forget (above all things don't forget) to bring the ladies."

R. G.

The following in the form of a very neat circular has been issued by the Chairman of the Ball Committee and is to be commended.

In this way each and every member of a committee or sub-committee knows in advance just what his duties will be; therefore any one not feeling confident of being able to serve has good and timely notice to begin training.

Dear Sir: It affords this Committee great pleasure to notify you that you have been placed upon the Committee.

Floor Manager, S. S. Shears, '97.

Assistant Floor Manager, Rudolph Gies, '95.

Floor Committee, Chas Bjorkwall, '95, C. S. Bailey, '95, Alfred Cosden, '96, Geo. C. Diekman, M.D., '88, B. F. Dauscha, '95, H. B. Ferguson, Phar.D., '95, Chas. Friedgen, '97, W. P. Gregorius, '96, W. A. Hoburg, Jr., '93, A. Higginbotham, '92, E. P. Lant, '98, John J. Maffia, '98, John Oehler, '97, F. N. Pond, '94, Joseph Piereson, '96, Arthur C. Searles, '86, Fred C. Schumacker, '96, Geo. E. Schweinfurth, '85, Alfred Stover, '83, Julius Tannenbaum, '94.

Press Committee, Eugene F. Lohr, '93, *Chairman*; Peter J. Ehrgott, '94; George J. Durr, '95; C. G. H. Gerken, '96; E. A. Meinecke, '97; T. Bruce Furnival, '98; I. Harold Thomas, '99; Robert B. Livingston, 1900.

Reception Committee, Nelson S. Kirk, '94, *Chairman*; Jos. Aquaro, '95; E. A. Boetzel, '99; Virgil Coblentz, Ph.D.; Walter W. Columbus, '99; G. B. Conlin, '99; Thomas M. Davies, '94; Carl F. Dyna, '97; W. H. Ebbitt, '97; H. A. Engle, '97; E. Eichler, '99; L. G. B. Erb, '94; Geo. A. Ferdinand, '97; Geo. A. Ferguson, Ph.B.; L. H. D. Fraser, '98; H. A. Graeser, M.D., '89; Otto Grube, '96; John Glassford, '97; L. W. Geisler, '94; Gordon Hager, '97; H. A. Herold, '94; Jeannot Hostmann, '96; Adolph Henning, '76; F. Hogel, '99; Henry Kreuder, M.D., '94; W. M. Keer, '95; Fred. W. Linnig, Jr., '94; R. Lauer, '99; James J. Morgan, '98; L. E. Michel, '99; E. C. Purdy, '99; C. H. Remele, '97; A. Robinson, '94; H. O. Rolfs, '99; Henry Sasse, '93; Henry Struck, '94; F. M. Stage, '93; W. L. Schaaf, '94; W. C. Schnackenburg, '94; W. C. Stubenrauch, '99; Chas. R. Tyler, '99; J. Henry Thomas, '99; J. A. Ulmschneider, '99; Edward Uhe, '94; A. E. Vars, '99; W. C. Vincent, '96; J. H. Wurthmann, M.D., '94; M. Wolk, '98; R. A. C. Walter, '99; H. H. Zincke, '99.

You will kindly report to the chairman at Lenox Lyceum on the night of the Ball (January 31, 1900) not later than 9 o'clock, when your badge of office will be handed you.

Hoping you will spare no effort to be present on this occasion.

Fraternally, The Committee,
FRED. BORGGREVE, *Chairman*.

Classes Prior to '93.

Our genial ex-President Searles is still an attendant at the meetings of the association. As a general thing the Ex's drop out of sight if not out of existence after their time of actual service has elapsed, not so with A. C. S., and not so with Adolph either; the ex-treasurer is always "on deck," still taking that "watch dog of the treasury" view of all expenses; and, by the way, he said recently that he had his entire house redecorated—as if it needed any decoration when the one and only Henning is there.

Ex-President Graeser is now at the German Hospital, house physician, I understand. He is evidently doing quite well.

Stover, another of the ex-presidents, has not been seen lately. He has been having a great deal of trouble, having sustained an injury of the arm from which recovery seems to go on very slowly.

A very interesting letter was received recently from Professor Chas. F. Heebner, of Ontario College. He writes of plenty of work and many successes and still bears that kindly feeling towards the Alumni, which is instilled into one on becoming one of its executive staff; he wants to be remembered to all of the "old fellows" of the classes of '70 and '80 and would be pleased to hear from any of them.

All the "Profs" and "Instructs" have promised to grace our reception with their presence on the 31st; so don't any of you fail to be on hand to give them that cordial greeting which they so well deserve.

E. R. B.

'93 Notes.

It was with a feeling of the deepest pain that we heard of the sudden death of our beloved friend, Chas. Zwingli. He had not been well for some years, but after going to Saranac Lake, about two years ago, he picked up wonderfully, and every time we heard from him it was only in the most cheerful, hopeful language. He was getting along famously, not only in health but also in business, and in our last letter we predicted a long, happy life for him. The news of his sudden death has filled us with feelings of the deepest pain, for we feel that they't don make them any better than was our dear "Popper" Zwingli, the name he loved best. Such an event makes one pause and think whether this world is run right or not.

What a number we have to look back upon, cut down in the best years of their life : Vroman, Wells, Bailey and Zwingli ; perhaps others of whom we have not heard.

Ambos is the hardest working man in the College. That's right, old boy, capture the prize.

Banks H. Bonton, debonnaire as ever, was seen recently on Broadway.

Fred Lawrence is still raising chickens and orating in the cultured town of Flushing.

Double Doctor (Phar.D. and M.D.) McCarthy must be a very busy man, as we neither see nor hear from him.

Herr Laufer is country squiring in Bloomfield, N. J. He always was a heise kartoffel. Here's a chance for our Latin editor.

The same old song—news, news, news. Send it along, boys, in chunks, fragments or bushels, any old way, only send it.

EUGENE F. LOHR.

'94 Notes.

John B. Foster, '94, is now the proprietor of a large and handsomely fitted corner store near the depot at Roseville avenue, Orange, N. J.

L. W. Geisler, '94, has also joined the ranks of proprietors and reports business good at 915 Amsterdam avenue.

Williams, '94, formerly with Riker's, has been for some time past with the Malt Diastase Co., and judging from his added avoirdupois must believe in taking his own medicine.

Our old classmate, Ezra B. Horton, appears to be as popular as ever. In a recent edition of a Peekskill paper we find a full account of a dinner given by him to the members of the volunteer Fire Department of that town on his ———teenth birthday—well, he is over 7 anyway.

P.

'95 Notes.

George E. Manville made his presence known within the walls of the college a short time ago by that old familiar laugh. Recently he has been in central New York in the interest of the Maltine Company and from what I hear (and not from George) things are booming in that quarter. His address for some time to come will be Boston, Mass., for the trade over there had a set of resolutions engrossed and presented it to the firm. It is rumored that it started off "All that we want (besides Maltine) is your fat Georgie back."

Henry G. Steinheuer, he of many turns and changes, from being volunteer and regular to navy, has at last landed in Jersey. He has tried everything and as a last resort it's Jersey. Henry, Hoboken is left, it's still on the map, and they are looking for you. 159 Main Street, Paterson, N. J., is where he is to be found.

Herbert Cooley (now plus the other $\frac{1}{2}$) was last seen up in Maine. He was on a hunting expedition but without success. Stearns & Co. has him in that section hunting for a place that does not possess some of their goods, and he didn't find a one.

H. A. Brandner is seen now and then at the college. Says he is working like a beaver and will make "it" sure.

Next time you're around ask "Harry B" "what time it is." He is the proud possessor of a new "piece" and beams with joy every time he has the opportunity of showing it. It's a beauty!

Q. E. D. must give the reporter who possesses the proud distinction of having an "umlaut" in his name a little "dig." Since George has had other duties to perform he hasn't been very active with his notes. I am under cover, however (if this hurts), and hope G. J. D. will appear instead of Q. E. D. at the end of '95's column.

Q. E. D.

'96 Notes.

Another man gone wrong? I see in one of the pharmaceutical papers that George Carter, night clerk at the Long Acre Pharmacy has married Mlle. Lucille de Marguerite, of Paris. Well done, George; we wish you all manner of success.

Dr. Charles G. H. Gerken and Roy C. Taplin have gone into partnership, having bought the pharmacy at the corner of Cornelia Street and Broadway, Brooklyn. The store was owned by Speth Bros. and has enjoyed the patronage of the community. "Charlie" and "Tap" will keep its reputation up in good shape, thereby enhancing the profession. All manner of luck and success, boys.

Uncle and Weber are in Greenpoint, Long Island, and own stores. Business must be good in that quarter, for they are kept hustling.

George H. Hummel has taken charge of a new store owned by his mother. It is located in Laurel Hill, Long Island, in the midst of a rapidly growing district. George says when the new East River bridge arrives "Brooklyn City" won't be in it.

C. G. H. G.

'97 Notes.

Our boys are again waking up as a good many reveille sounds, as well our girls. I heard from Mrs. C. F. Sherman (Miss E. North), "Sonny," Wooten, Eltinge and several others.

Eltinge said he thought he would drop me a line for the New Year, also incidentally a bill for a pair of pajamas he claimed I loaned and never returned during our house-keeping episode in "Smiles Charity Flat" during our senior year. In open space, my statement please accept, tis chilly, but lay your charges on the ice, dear boy.

Our Chesterfield Brigade's Captain, S. S. Shears, is said to have won fame for being one of the nattiest dressed men at Asbury Park last year, which can be easily surmised. You know he was always "just proper."

Fiedgen is as ever one of our dead ones. Lives a few blocks from the college, but is never heard from, like a few others.

"Always comes in bunches."—Gregorious. He is as ever with his father at 8th Avenue, corner 31st Street, N. Y.

Carl Linder, with E. B. Shields, Hudson Avenue, corner Sand Street, Brooklyn. So our Danish boy's card reads.

George Ferdinand, Esq., if you please, has come into quite a fortune it is said. And from what "Wirth tells me" he is the real thing amongst the ladies.

Benjamin Wert of the "Sloss Clique," who bought a store at Hoboken shortly after graduating, has sold same again owing to ill health. He is living quietly at his parental home at Hackettstown, N. J.

'99 Notes.

Now that Vars is married let us all congratulate him and wish him success and that his future days may be days of happiness. If the class only knew all, they might feel somewhat indebted to Vars, for he certainly did more for the class than any other individual student.

Harry S. Jenkins was in to see me the other day. Well, he's looking as young as usual and still retains that characteristic smile. (No, he isn't married.)

They tell me that Berndt (you must know Berndt) is fortunate enough to have a new position every other month. (How fortunate some fellows are.)

Johnson (Aubrey D., the one that sat up in the gallery of Carnegie Hall that night eating peanuts and flirting with ———), well he is still in the ring, but doesn't have much to say.

The Misses Blan and Molwitz will soon be doctors, Phar.D.; that will sound nice. It's too bad that we can't all be Phar.D.'s.

Merring and Mohr are still continuing to keep up the good old times (lots of fun and the time flies so quickly). I suppose Merring thinks there are other banks as well as the Wabash.

Who said Miss Levy was married? That's the first I heard of it and I don't believe it either, for you know Minnie is so young.

Just heard from our friend Fuhr. Brooklyn seems to be good enough for him. But he'll surprise us some day, just wait. I heard all about it.

Hofstetter is still at home, Hornellsville, N. Y.

Cadman is still in the city as usual and doing nicely, as I'm told.

Kessler is still on the Island (Blackwell's). Another Robinson Crusoe.

Kurmiur is at home in Davenport, Iowa. When you write ask him if he can bowl as good as ever, his address is 513 Scott Street. T. E. M.

'00 Notes.

Here is something for the smart ones to ponder over :

"A tooter who tooted the flute,
Tried to teach two tooters to toot;
Said the two to the tooter
Is it harder to toot, or
To teach two tooter to toot."

The class of 1900 has got its nose down to the grindstone for the home stretch. Grind, old man, grind.

Manager Endress is to be complimented in the manner with which the football contest between the "College of the City of New York" and our own birds of this college, was managed. Our men put up a strong defensive game and, although the score resulted in their defeat, let us still remember, "There is honor in defeat," especially when so nobly contested. Our team had next to no practice, nevertheless they had things their own way a good part of the game. Wait until next time.

Wilson, late of Scranton, Pa., has made a resolution not to smoke, chew, nor drink during the year. You will kindly assist him in keeping his pledge by not asking him out.

How many fellows have left their clamps out after chemical "Lab." All who have will kindly call at office and Dr. Ferguson will return same without cost. (?)

President Schaefer is the handsomest president of any class that has ever attended our college.

Kappa Psi fraternity had a great time at "Papa's Wife," the other evening. Most of the members got mixed up in the fray and reached home in time for breakfast next morning. "Such a headache."

Special Despatch; Delayed in transmission.

Let me first wish you all a "Happy New Year," and I hope that the entire year may be one filled with joy ("Raus mit Ihm"). Don't you think I ought to go preaching?

Charlie or Charles or Carl Lotz has lots of work on hand selling lots of drugs to lots of people who own lots of lots up at Bedford Park.

Britton, of the wild woods of Jersey, needs a haircut. What do you say to a subscription being made for same? He's not the only one, oh! dear, no.

Have you seen the "Moss"y "Grove"s together? They look like the heavenly twins.

"Sweet are the uses of adversity ;
Which like the toad, ugly and venomous,
Wears yet a jewel in his head ;
And this our life, exempt from public haunts,
Finds tongues in trees, books in running brooks,
Sermons in stones, and good in everything."
"As You Like It."

How is that, is it not charming? But alas a man who drinks whiskey Shakespeare ; so I'll shake you, my fellowworkers of the Pill Tile, until later.

So Long "Robie."

ROBT. B. LIVINGSTON,

"Class Reporter."

1901 Notes.

Don't be offended at any of the personals. It's the *other fellow*, of course.

The enormous demand for Goldberg's "Fractional Crystallization by Friction," must be very pleasing to the author.

This is the season when Junior and Senior alike deposit their watches with their "Uncle" (for safe keeping), hire a "spike tail" suit and pose as heavy swells at the Alumni Ball.

We hope the student who is taking the "Post Quiz" course derives as much benefit as the Quiz masters do pleasure (?) from the practice.

The fact that the "living pictures" have disappeared from Sixty-ninth Street accounts for Cole's unusual attention during Pharmacy quiz.

Dr. Jelliffe has convinced most of the students that the compound microscope is *not* an infernal machine.

We fail to understand Dr. Furnival's look of surprise when told that a Ruhmkorff's coil was only used to transmit messages.

If the product of the Dispensary Laboratory could be sent to the Philippines a standing army would no longer be a necessity.

In order to give all students a proper amount of rest, we would suggest that the Faculty make a rule forbidding "plugging" later than 2 A. M. on College days.

A free scholarship would be a suitable reward to Gordon for his efforts to entertain Section III. before the Professor appears.

Locks are no longer a protection since the Chemical Laboratory has become *haunted*.

If the Quiz reviews give you the "shakes" now, what will next April do to you?

Some of the drawings in microscopy bear more resemblance to a *Journal* map of South Africa than cell walls.

We hope there is no truth in the rumor that Plummer is a candidate for one of the "not dead but sleeping" cards that are being printed.

P. G., '00.

The first meeting of the Post-Graduate Class of 1900, was held in the Pharmaceutical Laboratory, January 9th.

Mr. Coulin acted as chairman. The following officers were elected: President, J. Harold Thomas; Vice-President, Elbert C. Purdy; Secretary, Fred Vanton; Treasurer, Ernestine J. Malwitz; Reporter, Fanny A. Blan.

Amidst great excitement and untold joy, the meeting, due to unexplainable causes, was abruptly dissolved.

Post-Graduate Class of 1900 with characteristic epithets: Mr. Conlin, Bird; Mr. Purdy, Inexplicable; Mr. Stern, Austere; Mr. Stubenrauch, Mathematician; Mr. Thomas, Basket Ball Champion (?); Mr. Vanton, Lover of Formulæ; Mr. Wettlin, Good natured; Mr. Wyckoff, "Generously good"; Miss Molwitz, Earnest; Miss Blan, Modesty Forbids.

Much to the surprise of Prof. Coblenz, the various reports on H₂O analysis closely corresponded.

Who volunteers to explain the situation?

In reply to the many "whys and hows" of his fellow students regarding the sudden lameness of Mr. Thomas, he emphatically asserted that "he had thoroughly enjoyed a game of basket-ball."

Who can tell, but that the Junior atmosphere (which certainly is of a salubrious nature) is accountable for the remarkable vocal capacity displayed by our venerable Stock Room attendant at 5:30 P. M.

What a poor football showing has our College made in the last two games with C. C. N. Y. Easily accountable, however—due to the lack of interest exhibited by our Post-Graduates.

Why not have our coming doctors (ladies excepted) partake, and thereby restore the former athletic reputation of the College.

Prop'r (non graduate) to clerk: "Can you make an orange phosphate without the addition of soda water?"

Ph. G.: "No, that's a fizzical impossibility."

FANNY A. BLAN,
Reporter, P. G., 1900.

Φ X Notes.

Our past W. C. C. is now a very busy man, having resumed his medical studies, but it is stated that he has positively declined to figure in any personally conducted trolley lines during the present term.

Among recent additions to our ranks are G. S. Remele whose pleasing gifts as an orator are well known, and Evans, of Utica, N. Y., who has succeeded to the proprietorship of one of the oldest drug stores in the State, his stand having been a drug store continuously since 1808.

At a reelection of officers made necessary by the resignation of W. C. C. J. Tannebaum, Bro. F. W. Pond was elected to that office, and M. Wolk was unanimously elected as W. K. R. S.

K Ψ Notes.

Some of the members passed a very pleasant evening recently at a ball given by Mr. Pfaff and his association.

Who takes his sister to the Alumni Ball? B——n.

A. K——e has sworn off. What?

We would like to hear more about the bowling match which was scheduled some four weeks back? Wake up, Phi Chi!

We notice gray hairs in the Secretary's head. Is over-study the cause?

The Society now boasts of some of the best members of the Junior Class.

What caused R——d's to leave the ball so early in the game? Too much food?

Did A——n go to the Reception? No! Why?

What member fluids clams in his chowder?



The Journal of Pharmacology

EDITED BY THE ALUMNI ASSOCIATION OF THE
COLLEGE OF PHARMACY OF THE CITY OF NEW YORK

CONTENTS

Urine Analysis by the Pharmacist	23
GEORGE C. DIEKMAN, Ph.G., M.D.	
The Microscopical Examination of Paper	28
SMITH ELY JELLIFFE, M.D., Ph.D., and CHAS. F. PFISTER, Phar.D.	
The Metric System	35
Book Reviews	36
Poisonous Plants	36
Alumni Reception 1900	37
Obituary—C. A. L. AMEND.	39
Class Notes	39-44



Maltine

MALTINE is not merely "malt," nor is it a mere "extract of malt," nor an "essence of malt."

MALTINE is the most highly concentrated extraction of all the nutritive and digestive properties of Wheat, Oats and Malted Barley.

It has stood alone and unrivalled throughout the world in its therapeutic field for more than twenty years, despite the most strenuous efforts of the ablest pharmaceutical manufacturers to produce a preparation approaching it in medicinal value, elegance, palatability and stability.

"Malt" is not "MALTINE."

"Extract of Malt" is not "MALTINE."

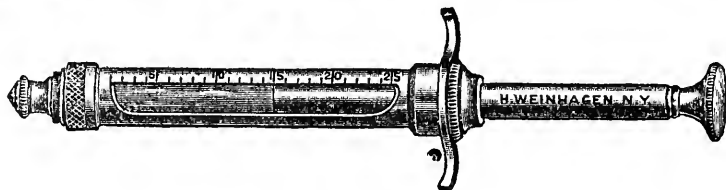
"Essence of Malt" is not "MALTINE."

"MAL TINE" must be designated to get "ALTINE."

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No. 2.

Urine Analysis by the Pharmacist.

By GEORGE C. DIEKMAN, Ph.G., MD.

(Continued from January Number.)

PART ELEVEN.

CHLORIDES (NaCl-HCl).

In normal urine chlorides are found chiefly as sodium chloride, with small quantities of potassium and ammonium chlorides. The latter are so insignificant that we usually only speak of the sodium chloride per cent. of urine, that is, the hydrochloric acid in urine is estimated as sodium chloride. Varying quantities of chlorine may be present in urine in the form of organic combinations. After urea, the chlorides constitute the main solid constituent of urine. Normally the quantity eliminated depends upon the quantity taken in with the food, so that after a meal a greater quantity is found in urine than at other times. Likewise, after prolonged severe bodily exercise the quantity is increased, while during periods of rest the quantity is diminished. On the whole, however, the quantity taken in, and that excreted, corresponds closely. The quantity eliminated by the healthy individual varies from 10-16 grammes per day, corresponding to about 6-10 grammes of chlorine. Pathologically the quantity eliminated may be materially diminished. In rare cases they disappear entirely from the urine for a time. Thus in many acute febrile diseases, such as pneumonia, etc., the quantity is diminished. In these conditions it is custom-

ary to observe the amount of chlorides excreted daily ; a disappearance would give rise to alarm, while a gradual daily increase would rather justify the expectation of a favorable outcome. It would be well if urine were more often examined relative to its per cent. of chlorides than it is. Exudative inflammations, particularly those with exudation into a serous cavity, cause a diminution in the excretion of chlorides, because in these conditions the exudate contains, as a rule, a liberal quantity of chlorides as well as other salts. In many cases of albuminuria, resulting from a diseased condition of the kidneys, chlorides are excreted in diminished quantity. In the course of many chronic diseases the quantitative estimation of chlorides is of great importance, for the reason that the facts so ascertained, serve as a clue to the activity of the digestive apparatus.

Detection of chlorides.—Usually the silver nitrate test is employed. If much albumin is present, it must first be removed. A small quantity, however, does not interfere. Silver nitrate precipitates phosphates and carbonates, as well as chlorides. It therefore becomes necessary, before applying the reagent, to add a few drops of nitric acid ; this keeps the disturbing elements in solution. Silver nitrate produces a white, curdy precipitate with chlorides. This precipitate is readily soluble in ammonia water, but is reprecipitated upon addition of nitric acid.

Quantitative estimation.—Before a quantitative estimation of chlorides can be made, any albumin which is present must be removed. This may be done in the manner already stated (see albumin).*

Methods employed :

1. *Volhard's method.*—This method is based on the fact that when a solution of potassium sulphocyanate is added to an acid solution of silver nitrate, containing a little ferric sulphate, a precipitate is formed, as follows :



Simultaneously a red coloration is noted, caused by the formation of ferric sulphocyanate.



At first this red color again disappears, the ferric sulphocyanate reacting with the silver nitrate.



The red color only remains permanent when all the silver has been precipitated in the form of silver sulphocyanate.

Solutions required.

A. $\frac{\text{N}}{10}$ AgNO_3 V.S. Prepared by dissolving 16.955 grammes of chemically pure silver nitrate in enough distilled water to make, at or near 15° C., exactly 1000 cc.

B. Solution of ferric alum $[(\text{NH}_4)_2\text{Fe}_2(\text{SO}_4)_4 + 24\text{H}_2\text{O}]$, saturated in the cold. Freshly prepared when wanted.

C. $\frac{\text{N}}{10}$ KCNS V.S. Prepared by dissolving 10 grammes of chemically pure potassium sulphocyanate in 1000 cc. of distilled water. This solution is too concentrated, and must be adjusted so as to correspond with the $\frac{\text{N}}{10}$ AgNO_3 V.S., cc. for cc. This may be conveniently done by following directions given in the U. S. P. (see Volhard's Solution) 10 cc. of decinormal silver nitrate solution together with 0.5 cc. of ferric ammonium sulphate T. S. (U. S. P.), and 5 cc. of diluted nitric acid, are placed in a flask. The sulphocyanate solution is added to this mixture, from a burette, in small portions at a time. A white precipitate of silver sulphocyanate is formed after which the red color of ferric sulphocyanate begins to appear. This however disappears upon shaking the flask, as long as any silver nitrate remains present, unchanged. When all the silver is converted into sulphocyanate, a single additional drop of the potassium sulphocyanate solution produces a red color which cannot be made to disappear upon shaking, but which imparts a perceptible tint (reddish) to the contents of the flask. Now note the number of cc. of the potassium sulphocyanate solution used and make the adjustment accordingly.

Example: Say 9.8 cc. of the potassium sulphocyanate solution were required. Then 980 cc. of the solution would have to be diluted to 1000 cc. in order to correspond to a $\frac{\text{N}}{10}$ V.S. After diluting, a new trial should be made, when a given volume of the one solution must correspond to the same volume of the other. It is well to note the depth of the tint to which the volumetric solution is adjusted, so that when used for volumetric assays, the same tint may be attained.

Execution of the method: 10 grammes of albumin free urine are placed in a flask or beaker of about 150 cc. capacity, and 20-30 drops of pure 30% nitric acid are added together with 2 cc. of ferric alum solution. If the sample of urine is very dark in color, so that it would be difficult to distinguish the end reaction, it is advisable to first add 3-4 drops of a strong solution of potassium permanganate (1-30), shaking thoroughly. This will generally cause most of the color to disappear. Now add from a burette a definite volume of the silver nitrate solution, being sure this is in excess. (About 30 cc. will generally suffice.) Add distilled water to make 100 cc. and mix thoroughly. Filter through a dry filter, and by means of a pipette remove 50 cc. of the filtrate. Titrate this with the decinormal potassium sulphocyanate solution until a faint, but permanent, reddish tint is attained. The number of cc. of decinormal potassium sulphocyanate solution used are multiplied by two and the product deducted

from the number of cc. of decinormal silver nitrate solution, originally employed. The difference represents the number of cc. of decinormal silver nitrate solution which were actually required to combine with the chlorine present. From this the quantity of chlorine expressed as such, or as sodium chloride, eliminated during 24 hours is calculated.

$$\begin{aligned} 1 \text{ cc. of } \frac{N}{10} \text{ AgNO}_3 \text{ V.S.} &= 0.003537 \text{ gm. chlorine.} \\ &= 0.005837 \text{ gm. sodium chloride.} \end{aligned}$$

Example : To 10 cc. of urine 25 cc. of decinormal silver nitrate solution were added ; 50 cc. of the filtrate (obtained as above) required for the production of a permanent reddish tint, 2.5 cc. of the decinormal potassium sulphocyanate solution ; 100 cc. (the entire filtrate) would, therefore, have required 5 cc. As each cc. of the decinormal potassium sulphocyanate solution is the exact equivalent of 1 cc. of the decinormal silver nitrate solution, therefore, 5 cc. represent the number of cc. of decinormal silver nitrate solution which were added in excess. $25 - 5 = 20$, this number therefore represents the number of cc. of decinormal silver nitrate solution required to combine with all the chlorine in the sample. If each cc. of the decinormal silver nitrate solution is the equivalent of 0.005837 gm. of sodium chloride, then 20 cc. will be the equivalent of 20×0.005837 , or .116740 gm. of sodium chloride, or this quantity was present in 10 cc. of urine. Now suppose 1200 cc. of urine were eliminated during 24 hours ; then,

$$10 : .11674 :: 1200 : x = 14.0088,$$

or 14.0088 grammes of sodium chloride were present in the urine passed during 24 hours.

It is of course not absolutely necessary to employ decinormal silver nitrate V.S. Any silver solution whose sodium chloride or chlorine equivalent is known may be employed. The solution of potassium sulphocyanate also need not correspond cc. for cc. to the decinormal silver nitrate solution. Its exact relation to this must, however, be known.

Example : To the 50 cc. of filtrate (as above), containing 15 cc. of the decinormal silver nitrate solution, it was found necessary to add 6 cc. of potassium sulphocyanate solution, or 12 cc. to 100 cc. of filtrate. According to its titre, 9.6 cc. of this potassium sulphocyanate solution were the equivalent of 10 cc. of the decinormal silver nitrate solution. Therefore, 12.5 cc. must be deducted from the 30 cc. of decinormal silver nitrate solution originally employed, as follows :

$$9.6 : 10 :: 12 : x = 12.5,$$

$30 - 12.5 = 17.5$. $17.5 \times 0.005837 = .1021$ gm. or 1.021 % sodium chloride in 10 cc. of the sample employed.

2. The quantitative estimation of chlorine may be carried out after ashing the sample of urine with sodium carbonate and sodium nitrate. In

view of the fact that some of the chlorine may be in organic combination, and would therefore not be taken into account by Volhard's method, this method of procedure would seem to yield more accurate results.

Execution of method : 10 cc. or preferably 10 gm. of urine are evaporated in a platinum crucible with 2 parts of sodium carbonate and 1 part of sodium nitrate and then carefully ashed. The residue thus obtained is extracted with distilled water, acidified with nitric acid, and the solution thus obtained is carefully neutralized with pure sodium carbonate. To this solution a few drops of a solution of potassium chromate (10 gm. K_2CrO_4 — 100 cc. H_2O) are added, and the mixture titrated with decinormal silver nitrate solution until a permanent red tint develops. (Method of Mohr.)

$$1 \text{ cc. } \frac{N}{10} AgNO_3 \text{ V.S.} = 0.003537 \text{ gm. chlorine.} \\ 0.005837 \text{ gm. sodium chloride.}$$

This method is based on the fact that when silver nitrate is added to a neutral solution of a chloride, a precipitate of silver chloride is formed. When all the chlorine has united with silver, then the next drop of silver solution added will unite with the potassium chromate, forming red silver chromate. Magnesia is sometimes added in order to make the red color more apparent; if this is done care must be taken that it is free from chlorides.

The fused mass obtained as above may also be extracted with distilled water acidified with nitric acid, and then treated as in the Volhard method. This procedure is found to be even more accurate than the Mohr method. The method of ashing is also particularly serviceable in case of urine containing albumin. If iodides or bromides are present these methods must be modified. As however the estimation of iodine and bromine in the presence of chlorine is seldom necessary in urine analysis, the methods by means of which this may be accomplished need not be considered here.

Sulphates (H_2SO_4 , SO_3).

Sulphur as found in urine is divisible into two groups: first, completely oxidized or acid sulphur, and second, partially oxidized, or neutral sulphur. To the latter group, all the sulphur containing bodies, except sulphuric acid, belong. Among such bodies may be classified sulphocyanates, thiosulphates, cystin, taurin, etc. Some of these, as for instance, sulphocyanates and thiosulphates, are readily oxidized, others are only oxidized with difficulty. In the urine of the dog the neutral sulphur constitutes about 30% of the total sulphur eliminated, while in urine of man it averages only about one-half of this amount. Sulphuric acid belongs to the first group, namely, to the group containing the completely oxidized sulphur. This group is again subdivided, as follows :

A. Sulphuric acid in combination with metals (simple or præformed sulphates).

B. Sulphuric acid in combination with organic bodies, such as phenol, skatol, indol, pyrocatechin, etc. (conjugate or ethereal sulphates).

The first form of this sulphur reacts readily with barium chloride, the second does not. The total quantity of sulphur excreted by way of the urine, during 24 hours, varies from .5-1 gramme (1.5-3 gm. SO_3). In general, the relation of the simple sulphates to the ethereal sulphates in normal urine is as 10 is to 1.

Inasmuch as the proteins of the ingested food and of the tissues are almost solely responsible for the sulphur which is excreted, the quantity of the latter may vary considerably, depending upon the extent of protein disintegration, and tissue waste going on in the body. A fairly constant relation exists between the nitrogen and sulphur (H_2SO_4) eliminated ($\text{N} - \text{H}_2\text{SO}_4 = 5 - 1$).

The excretion of ethereal sulphates is increased after the ingestion of bodies such as Phenol, Cresol, Resorcin, etc. Also in cases of intestinal putrefaction, constipation, abscess, etc. In such cases, and under such conditions the usual relation between the ethereal and simple sulphates is disturbed.

Detection of sulphates: Barium chloride causes a white precipitate (barium sulphate) to form in urine acidulated with hydrochloric acid.

(To be Continued.)

The Microscopical Examination of Paper.*

BY SMITH ELY JELLIFFE, M.D., PH.D., AND C. F. PFISTER, PHAR.D.*

The microscopical examination of paper mainly involves the determination of the kind of fibers which make up the paper substance. The fibers are not only the principle and most valuable constituents of paper, but for their recognition we rely entirely upon the microscope.

By micro-chemical means the sizing, coloring-matter and filling of paper may also be determined. This is, however, possible only when a sufficient quantity of the material to be examined can be obtained, which

* Abstracted and translated from F. R. von Höhnelt's, *Die Mikroskopie der Technisch verwendeten Faserstoffe*.

† Microscopical Laboratory College of Pharmacy, City of New York.

is not always the case, and very faint colorations can be detected micro-chemically only. Of the various chemical reactions, those for lignin (sulphate of anilin, phloroglucin and hydrochloric acid, or indol and hydrochloric acid) alone can be used macro-chemically for the determination of fibers in paper. In general, however, these reactions do not show the presence of any particular fiber, but indicate only the existence of varying degrees of lignification. Accordingly, these lignin tests demonstrate the presence of lignified fibers, but do not tell how much is present nor the nature of the fibers. This is so much more the case since the same kind of fiber may or may not show lignification according to the treatment undergone, for certain chemicals (alkalies, acids, bleaching materials) destroy the lignin.

When two or more kinds of fibers are mixed, their relative proportions can be ascertained only by means of the microscope; namely, by careful counting.

EXAMINATION OF THE FIBER.

In examining paper for its fiber it is only necessary to cut off a very small sample, which is then moistened with water, or a mixture of equal parts of alcohol, 95%, water and glycerine, and carefully teased. Thereupon the fiber may be examined in the examining fluid under the cover-glass. Care should be taken to tease the sample carefully in order not to tear the fibers, for the latter should be examined in a condition as similar to that in which they exist in the paper as possible. Obviously the previous thorough softening of the paper in water is quite necessary.

The number of kinds of fibers that may occur in paper is very large. The coarser papers may be made of almost any fibrous mass.

At the present time, plant fibers almost exclusively are used in the manufacture of paper, since animal fibers, even after having been used several times, can be used to better advantage for other purposes, for in general they add greatly to the expense of the paper.

In foreign papers one finds a great number of strange fibers whose recognition is very difficult.* In† general, however, the papers ordinarily found in the market contain the following fibers: Cotton, linen, hemp, jute, corn-husk, cereal straws, esparto straw, bamboo, rice-straw, woods (popular, cedar, pine, etc.), mulberry-tree bast, sunn fiber, bast of *Lagetta Lin-tearia*. The expressed and extracted stalk of the sugar cane is also an important raw material in the fabrication of paper.

In the majority of papers one finds only linen, cotton, cereal straw, and wood fibers. The other above mentioned raw stuffs, and many others, are rarer. Still in research work esparto, bamboo, jute, corn-husk, rice, mulberry, and hop fibers are of importance.

* Royle. *The Fibrous Plants of India*. London. 1855, p. 392.

† Wiesner, J. *Oesterr. botan. Zeitschrift*. 1864, No. 3.

The following résumé considers only the more important fibers that enter into the composition of paper.

1. *Linien Fibers*.—It would be erroneous to expect to find linen fibers of the same appearance in paper as in the vegetable tissue. As a rule linen paper is made from rags and only exceptionally from tow. In old linen rags the fibers appear torn, mangled and destroyed in many places. This is, of course, still more the case in paper, especially in the finer varieties.

Characteristic of linen fibers are the knotty swellings which occur at the joints. Longitudinal splits and cracks are so numerous that the lumen can hardly be recognized, and the ends of the fiber are often dissected into fine fibrils.

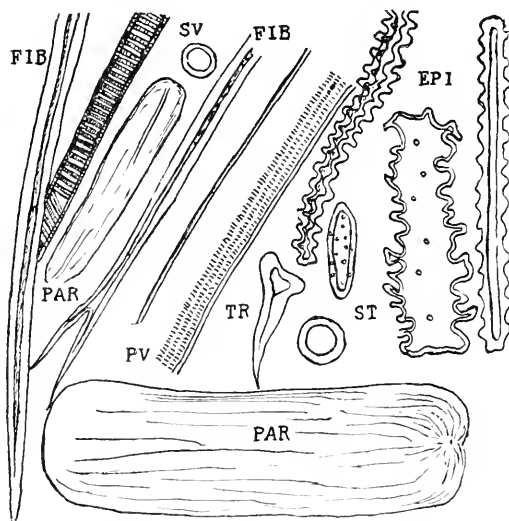


FIG. 1. Straw Paper.—Par., Parenchyma of Center; Epi., Irregular Epidermal Cells; St., Stone Cell; Tr., Trichome; S. V., P. V., Spiral and Pitted Vessels; Fib., Bast Fibers; $\times 100$ diam.

2. *Hemp Fibers*.—In many papers these occur in a well-preserved condition. Hemp-tow is used in papers which must combine great tenacity and lasting qualities with comparative thinness, as in bank-notes, etc. Papers made of old hemp-rags exhibit the same disintegrated fibers as is the case in linen papers. But the hemp fibers being somewhat more brittle, their torn ends have shorter fibrils than those seen in linen fibers. However, there are some fibers present always which are not destroyed and which render it possible to determine with certainty the presence of hemp fibers even in paper.

3. *Cotton*.—Cotton is always readily recognized by the well-preserved wall and the ever-present cuticle of its fiber. The cuticle is, however, not everywhere present and frequently is torn in many places. But the pieces

of cuticle that remain after the fiber has been treated with sulphuric acid are so characteristic that cotton can always be made out with certainty, even if it exists in the paper in a much demolished condition. The cell-wall is often swollen, but it never shows knotty swellings, such as are seen in hemp and flax.

4. *Straw*.—Straw from wheat, rye, oats, rice and corn is readily recognized in paper by the fact that in addition to its rather characteristic fibers it also contains other well marked elements. These are bundles of vessels, mostly thin, spiral or reticulated, or portions of same (fragments of spirally thickened vessels, single rings, etc.). Further, large, empty parenchymatic cells which are usually thin-walled and short, with rounded corners. Some, however, are long. In the latter case up to 33 mikra broad, and often thickened with pore-like markings. Thirdly, much-thickened sclerotic epidermal cells. These are highly characteristic in form, and enable one to recognize at a glance any straw that may have entered into the paper. They are flat, possess thick outer walls and thin inner walls; the side walls have numerous, regular indentations which in the case of the long, narrow epidermal cells, give them the appearance of a two-sided saw. The fibers of the four above-mentioned straws are about as wide as linen fibers but they are shorter. They are not lignified and have relatively thinner walls than linen fibers. The ends almost always come to a point and often are forked. The numerous dislocations are also striking, these however, do not exist originally, but are the result of the processes of paper manufacture. Moreover, straw-fibers are of very uneven thickness, some being very thin, others very thick and short. Another important difference between straw and linen fiber consists in the state of their preservation. Straw fibers are always readily recognized in paper by all their properties; the sharp and often forked ends being especially noticeable, whereas linen fibers occur mostly in fragments, which, furthermore, are usually torn and macerated. According to Wiesner the average diameters of straw-fibers are as follows: Barley, 5-12; rye, 9-17; oats, 10-21, and wheat 10-21 mikra. Corn-fibers may be distinguished by their great diameter (10-82 mikra) and by their form, *i. e.*, they commonly have blunt, forked, knotty ends, which sometimes even appear branched. Their length is considerable, varying from 0.4 to 5.6 mm. The fibers are, as a rule, relatively thin-walled; the lumen appearing as a narrow line. According to Wiesner they contain an iron-green tannin, and, in contrast to the fibers obtained from oats, barley, rice, wheat and rye, are lignified. Corn-husk paper may, therefore, be distinguished from the ordinary straw paper and from genuine rice paper by the fibers (Fig. 3). The various kinds of straw papers, to the contrary, can only be distinguished with certainty from each other by the epidermal cells, their form and dimensions. The latter are, according to Wiesner, as follows:

Corn-husk,	108-252 mikra	long and 36-90 mikra	broad.
Rye-straw,	86-345	" " " 10-16	" "
Esparto-straw,	28- 88	" " " 7-19	" "
Barley-straw,	103-224	" " " 12-14	" "
Wheat-straw,	152-449	" " " 18-24	" "
Oat-straw,	186-448	" " " 12-17	" "

Oat, rye and wheat-straws have rectangular epidermal cells. In the case of rye-straw the side walls are markedly wavy, in that of wheat-straw almost straight, and in oat-straw somewhat wavy. Barley-straw has more irregular, almost rhomboidal epidermal cell walls. Entirely irreg-

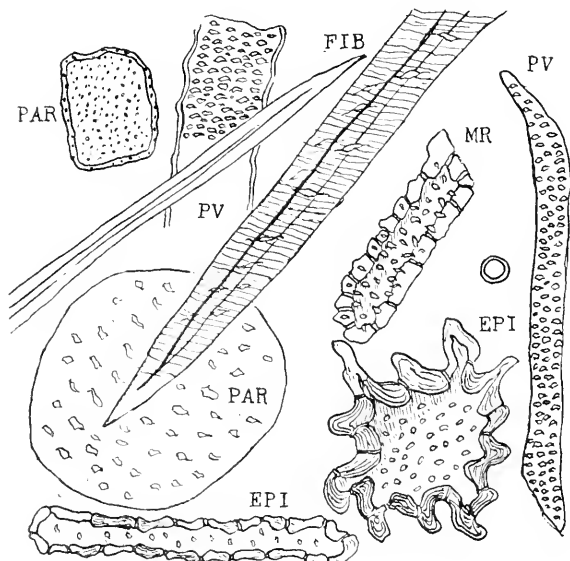


FIG. 2. Corn Husk and Stalk Paper.—Par., Parenchyma, thin-walled and thick-walled; Epi., Epidermal Cells; M. R., Irregular Stone Cell; P. V., Pitted Vessel; Fib., Bast Fibers; $\times 100$ diam.

ular, and very broad and strong-walled epidermal cells occur in corn-husk paper. They often form large groups, occupying a space up to 1 mm. square.

Rice-straw possesses very narrow fibers (mostly 7 mikra in width), and narrow, relatively very long epidermal cells with strikingly thick outer walls, which exhibit wart-like thickenings. The Chinese rice-papers (mostly tapestry papers) are often sized with starch-paste and usually contain parenchymatic cells with remnants of starchy contents.

5. *Esparto-paper*, on microscopical examination, is readily recognized as belonging to the straw papers. It is quickly told from the ordinary varieties of the latter by its peculiar epidermal cells (Fig. 4).

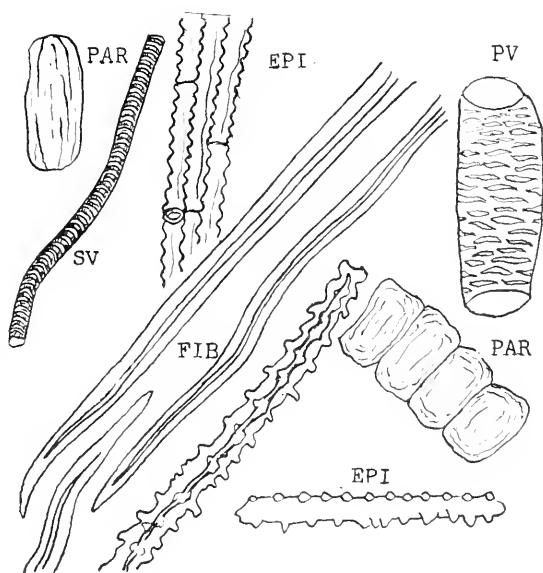


FIG. 3. Rice Paper.—Par., Parenchymatic Cells; Epi., Epidermal Plates; S. V., P. V., Spiral and Pitted Vessels; Fib., Bast Fibers; $\times 100$ diam.

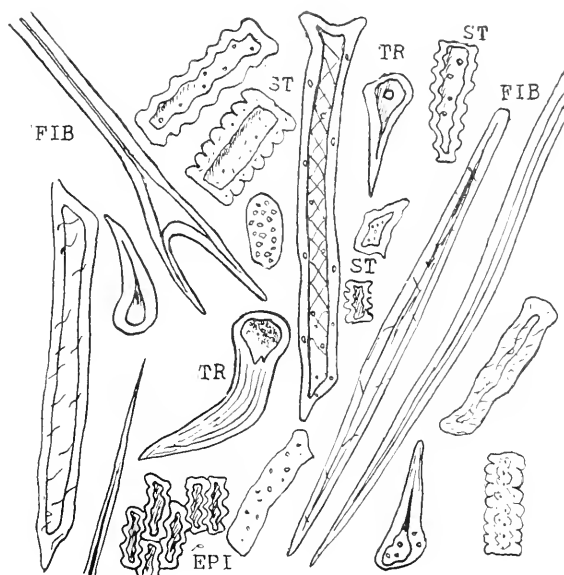


FIG. 4. Esparto Paper.—Epi., Epidermis; Tr., Trichomes; St., Stone Cells; Fib., Bast Fibers.

6. *Bamboo-cane* is much employed in China, Jamaica, England and other countries for making paper. Especially the fine papers known by the name of Chinese silk-papers, are made of bamboo fiber, partly of old bamboo-wood, and partly of wood of younger growth. Wiesner states that in bamboo papers one finds bast fibers of very varying forms, which may be traced back to the three following forms: 1. Short (average length, 720 mikra); narrow ones, with but a filiform lumen. 2. Long, broad, not much thickened, of but 17 mikra diameter, and 3. Long, ribbon-like flat fibers, which vary in width, and which are often twisted similarly to cotton fibers. One also encounters in bamboo papers a few ducts (re-

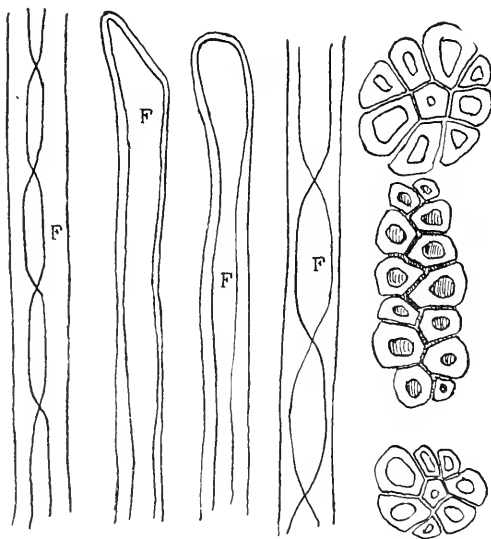


FIG. 5. Jute Paper.—Showing F, the Bast Fibers with rounded and sharpened ends and cross sections of fibers.

ticulated, dotted, as well as annular ducts, and some spirally thickened ones). Single annular rings are frequently seen.

7. *Jute* (see Fig. 5) for principal elements.

8. *Paper Mulberry Tree* (*Broussonetia papyrifera*) (Fig. 6).—In this fiber the thin, loose and broad cellulose membrane which envelopes it is particularly characteristic, and further the short rod-like or prismatic crystals that are often seen adhering to the fibers. They are made prominent with polarized light. The mulberry-tree fibers are the longest fibres used in making paper. To them is due the tenacity of Japanese and of some Chinese papers. They also render it possible to make extremely light and delicate papers with a wide mesh.

(To be continued.)

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Original Contributions, Exchanges, Books for Review and Editorial Communications:
Address HARRY B. FERGUSON, Phar.D., 115 West 68th Street, New York City.

EDITED BY HARRY B. FERGUSON, PHAR.D.,

WITH THE COLLABORATION OF

CHAS RICE, PH.D. H. H. RUSBY, M.D. V. COBLENTZ, PH.D. GEO. A. FERGUSON, PH.B.
GEO. C. DIEKMAN, M.D. JOHN OEHLER, PH.G. SMITH ELY JELLIFFE, M.D., PH.D.

The Metric System.

The following has been received from Prof. Frank G. Ryan, Chairman Committee on Weights and Measures, American Pharmaceutical Association.

The Committee on Coinage, Weights and Measures of the House of Representatives is again considering the subject of the adoption of the metric system of weights and measures as the legal system of the United States—with a view of presenting a report to Congress upon this subject. The Chairman of the special Committee on Weights and Measures of the American Pharmaceutical Association would urge all members of the Association and all Pharmacists of the United States who favor the adoption of the measure to write to the Hon. James H. Southard, Chairman of the House Committee, Washington, D. C., presenting their views upon this subject.

Probably no class of persons would be more benefitted by the adoption of this measure than the Pharmacists of this country hampered and annoyed as they now are by being compelled to use Avoirdupois and Apothecaries weight, wine measure, and in some sections imperial measure as well as the metric system.

Since the foundation of the Republic there probably has never been a time when the importance of this subject was more apparent than it is at present. With the acquirement of new territory in distant parts of the world, and the increase of our commerce with foreign nations, a universal system of weights and measures become more than ever desirable. Pharmacists of the United States are to be congratulated on the advanced position they have taken in securing the adoption of the metric system exclusively, by the United States Pharmacopœia in 1890, and it is hoped that they will continue to aid in securing its adoption by Congress as the only legal system of weights and measures in the United States.

We hope that our readers will extend the Committee their hearty co-operation by complying with above request.—Ed.

Book Review.

Plant Relations. A First Book of Botany. By JOHN M. COULTER, A.M., Ph.D., Head Professor of Botany, University of Chicago. Crown 8vo, 264 pages. Illustrated. D. Appleton and Company. New York.

The production of text-books of Natural Science for the young is multiplying enormously. The present work is one of the best of its kind. The facts, regarding the plant world, which were gathered by such observers as Darwin, Kerner von Marilaun and William Hamilton Gibson, and presented by each in his own inimitable manner, have had an immense influence in causing dry professorial instincts to become quickened to the realization that the plant world is active with interest, and is not a glossy grave-yard of dry definitions. The influence, more particularly of Kerner's *Pflanzenleben*, so ably translated by Oliver, has created a number of abbreviated replicas of that magnificent work. The present work owes much to Kerner, especially in the facts, now so widely termed Ecology, but which old plant lovers understood as "Botany;" but it is not a servile copy but a carefully selected and wisely planned text-book.

The complete work is divided into two books, each adapted to one-half year's work, the first is devoted more particularly to the study of ecology, with related physiological teachings, while the study of plant structure or morphology is to be more distinctly elaborated in the second book of the course. Book I. is the part under discussion. Speaking first of the most striking feature in this volume, the highest praise should be given to its pictorial completeness. The good illustrations, mainly half-tones from photographs, stamp the volume as perhaps the best illustrated text-book for intermediary and high schools that has yet appeared.

The text is simple and direct, at times it slips into the extreme technical form of presentation, which for the scope of the volume should be avoided, but for the great part the author has carefully scanned his audience and applied his teaching to their capabilities. We very heartily commend this volume, and, although different classes of students need different text-books of varying degrees of technicality, yet we would like to see more text-books of this type.

JELLIFFE.

Poisonous Plants.—The Botanist of the U. S. Department of Agriculture, in his report for 1899, states that 67 cases of poisoning by plants were investigated by his department, against 41 in 1898, and 34 in 1897. Of these, 41 pertained to men and 26 to farm stock. The fatalities included more than 4000 farm animals and 21 humans. The percentage in England is about half as large.

H. H. R.

Alumni, College and Class Notes.

CONTRIBUTORS.

Alumni Association,	WM. A. HOBURG, Jr., Ph.G., 115 West 68th St., N. Y.
Alumni Notes, Socials, etc., and Classes prior to 1893, . . .	CHAS. S. ERB, 121 Amsterdam Ave., N. Y.
Bibliography,	ADOLPH HENNING, Ph. G., 68 William St., N. Y.
Class '93,	EUGENE F. LOHR, Ph.G., 508 Marcy Ave., Brooklyn, N. Y.
Class '94,	FRANK N. POND, 226 Ninth Ave., N. Y.
Class '95,	GEO. J. DURR, Ph.G., Randalls Island, N. Y.
Class '96,	CHAS. G. H. GERKEN, Phar.D., 169 S. 4th St., Brooklyn, N. Y.
Class '97,	E. A. MEINECKE, Ph.G., 14 Platt St., N. Y.
Class '98,	T. B. FURNIVAL, Ph.G., 115 West 68th St., N. Y.
Class '99,	THEODORE E. MEYERS, Dorranceton, Pa.
Class 1900,	ROBERT B. LIVINGSTON, 115 West 68th St., N. Y.
Class 1901,	ABERT C. THOMPSON, 115 West 68th St., N. Y.
Post Grad. 1900,	FANNY A. BLAN, Ph.G., 115 West 68th St., N. Y.
Legal Notes,	H. A. HEROLD, Ph G., 108 Fulton St., N. Y.

Alumni Reception, 1900.

Well, boys, "The Dance" has passed and gone, and it went, followed by the regrets of at least 600 participants, who could hardly realize that it was near daybreak and that there *was* one other place to go besides the Alumni ball, and that was home.

We have all been at great functions, but never was there an affair which proceeded so smoothly, so nicely, so grandly as did our fifth number.

The committee deserves the thanks of the Association for their good work, their tasteful decorations, both national as well as floral, which latter, coupled with the costumes of our own dear ladies, pictured a scene never to be forgotten. To me, men always look about the same, but on this occasion the ladies surpassed all former events, not only in numbers, but in beauteous appearance.

The grand march was a "Maze" and many a swain thought that his fair one had perchance gone off with another, but by the aid of those experienced ladies' men Ferguson and Gies, all went well.

Capt. Gies can never forget his right to run things, and now since he is Admiral it is even harder to resist.

Gies says Ferguson don't know how—but 'tween the two they "did it" and the march didn't get tangled up in any of Dr. Coblenz's alpha beta para, etc., compounds. Of course, "Our Mandy" was there, and for once he will not be able to say that it was R——; he is the hardest critic to please and he gave me his word of honor that it was the nicest affair he visited *that night*; he was accompanied by his wife.

Our old stand by, Harry Yager, was to be seen wearing a broad smile, and a pink which I didn't pay for.

It was he who saved the day or rather night, the first time the Alumni held a reception; its a long story, so you must ask him to tell it, and Swann, well! well!! well!!! he's always with the Alumni; he is already preparing for the outing. His wife who was with him is also a rooter for the Alumni. Then there was Hamlin, but he was quiet; he must have thought he was in Philadelphia. I think I will have to get him to take me over there sometime to see what it looks like; he too was present with his better half. I also noticed Thurlow, but he was not very uproarious, but he is convinced more than ever that the Alumni is the thing. The faculty was present in the persons of Drs. Ferguson, Diekman and Ferguson. Notice how these three stick together. The Office was represented by the Office. Then there was Brooklyn Alumni German Apothecary Society, King's County Association, Retail Druggists' Bowling Club, Phi Chi Kappa Psi, Seniors and Juniors and a host of wholesalers—all bent on enjoying themselves, and they did to their hearts content.

Just think of stampeding the band and making them play two more dances after they had finished the programme and were ready to depart—if that doesn't show enthusiasm what would? Our old and tried friend Hays, of the *Circular*, Harris, of the *Era*, and Mayo, of the *Amer. Druggist*, represented the Pharm. Press. They, no doubt, can talk for themselves through their columns. There were only two things which did not turn up and they were Borggreve's Surprise and Supper for all. Of the former I understand one-quarter was on the sick list and that spoiled the quartette, of the latter there need not be much said except that the caterer was swamped, he now realizes that the Alumni eat a man out of house and home.

Our worthy Professor Ferguson brought the Mrs. with him and she is coming again, Professor Diekman was accompanied by Miss Cheney, Dr. Ferguson by Miss Parshley, "our own" Billy Hoburg and his sister were there, Thomas Bruce Furnival and Miss Groome could be seen, but it struck me that Tom ought to be groomer. Griffin (there's only one) had brought his wife over from Flushing. It was her first appearance, but will not be the last. Miss Griffin was also of the party. The other end of the office, the fiery end I mean, was represented by Dr. Gies, the ever amiable full of smiles "Rudy." Mrs. Gies was also there and helped make the affair a success. She was accompanied by a family of friends to the number of fifteen.

Our worthy ex-President Searles and his wife and Miss Hubbell, ex-President Greaser and Mrs. Ottendorfer represented the "has rans."

President Erb, Vice-Presidents Kirk, Pond and Tyler, the latter with Miss Selwood, Secretary Hoburg and his sister, Treas. Diekman, Registrar Bjorkwall, Miss Bjorkwall and Mrs. Bjorkwall proved that the officers of the alumni are all right. Of the members, I recall Mr. and Mrs. Herold, Mr. and Mrs. Tannenbaum, Mr. and Mrs. L. G. B. Erb, Mr. and Mrs. Schweinefurth and Miss Gibson, Mr. Dauscha and the Misses Krone and Schwartz, Mr. and Mrs. Remle, Mr. and Miss Dürr, Mr. and Mrs. Schaaf, Mr. Ihmels and Miss Owen, Mr. Lohr and Miss Eben, Mr. Meinecke and Miss Ryan, Mr. and Mrs. Pfister, F. M. Stage and Miss Stage, Mr. Martin and Miss O'Leary, Mr. and Mrs. Race, Messrs. W. P. L., L. F. and G. Gregorius with the Misses Barnett, Messrs. J. T. Kirk, E. P. Lant, L. E. Michel, J. Pierson, J. Siegmann, L. E. Stephans, S. S. Shears, W. C. Stubenrauch, F. P. Tutthill, A. Tscheppé, W. C. Vincent, R. C. Taplin, P. J. Schaaf, Max. A. Auerbach, H. F. Ahrens, F. Borggreve, E. A. Boetzel, F. W. Brown, G. M. Davies, W. A. Ebbitt, L. H. D. Fraser, L. W. Geisler, G. W. Gschwind, W. A. Guthrie, S. Ackermann, A. Brooks, F. Nagel, Dr. W. G. Robinson, Misses M. Levy, C. F. Ehlin, S. Noralk, M. E. Grebe, of the class of 1900, Messrs. Wilson, Greene, Veeder, Christ, Werner, Paisley, Schaefer, Hamilton, Winne, Adatte, Reynolds, Morse, Unbehau, Zahn, Britton, Jorgenson, Martin, Kaehrlé, Freese, Casey, Lynch, Burke, Pugliese and O'Connor, 1901; Messrs. Banzshof, Allen, Thompson, Hart, Hill, Kaehrlé, White, Bradbury, Mason, Jordan, Hubner, Priest, Ward, Anrig and Vars, President Woodcock, of the Brooklyn Alumni, with quite a delegation; there were also present Mr. and Mrs. Hamlin, Mr. and Mrs. Toussaint, Mr. and Mrs. C. E. Smith, Mrs. R. R. Smith, Mr. and Mrs. Mandelbaum, Mr. and Mrs. Rothenberg, and Miss Rothenberg, Mr. and Mrs. Swann, Mr. Agatson and Miss King, Mr. Hauenstein and Miss Brown, Mr. and Mrs. Harper, Mr. Williamson and the Misses Williamson, Miss Stoddard, Mr. Fitzpatrick, Miss Fitzpatrick, Miss Davison, Mr. Owens, Dr. Runquest, Mr. McManus, Mr. Dobbins, Lieutenant Hooley, Mr. Unger, Dr. Sartorius, Mr. Mariamson, Dr. Wilson, Mr. Menke, Mr. Geier, and Mr. Thebal.

The affair was ably managed by Chairman Barggreve and Floor Director Shears, and certainly bespeaks well for a grand ball in 1901.

Obituary.

It is with sincere regret that we find it necessary to chronicle in this issue, the death of C. A. L. Amend, who graduated from the College of Pharmacy of the city of New York in the year 1889, and shortly afterwards became a life member of the Alumni Association :

Mr. Amend, was born May 30, 1858, he attended and graduated from Columbia Grammar School, and after graduation entered his father's business (Mr. B. G. Amend, of the well known drug firm of Emier and Amend).

When the above named firm was incorporated in the year 1897, he became one of its directors.

He was married to Miss Helen Frautwein of Hoboken, New Jersey, Oct. 22, 1891, and the union was blessed with a girl who is now five years of age.

He was also a member of the New York Arion and Liederkrantz Societies, and was the youngest of three sons of Mr. B. G. Amend, the president of the above mentioned firm.

He died on Friday, Jan. 19, 1900 at seven o'clock A. M. after a brief illness, of pneumonia, he having been able to be about the day previous. Always a hale fellow well met, of sterling character and sunny disposition, his death has removed a good member, friend, and citizen, and he will unquestionably be missed with regret, by his friends, acquaintances, and all with whom he has ever come in contact.

R. G.

'95 Notes.

Now that I am temporarily relieved from my arduous duties, I take extreme pleasure in chronicling the greatest of Alumni successes, the Fifth Annual Ball, held at the Lenox Lyceum on the 31st of January.

The hall, although quite spacious, was almost overcrowded ; most undoubtedly the immense crowd of old members, many new members and a multitude of new comers, comprised chiefly of the friends of the Association, indicated how steadily and rapidly our Association is assuming vast proportions.

Such members of our class who were not there, missed one of the most enjoyable occasions of their career, and cannot begin to estimate or conjecture how successful the affair really was. To any such let me add that by their presence at the next ball I may be enabled to write of even a more enjoyable and successful occasion, if that is possible.

Among the many happy faces I saw there, I was enabled to recognize and greet the following : C. H. Bjorkwall, H. B. Ferguson, R. Gies, R. Cordner, B. F. R. Dauscha, R. J. Meighan, L. G. Sharnikow, and many others whose names I cannot now recall.

Although there is not a little work attached to my position as class reporter, I take great pleasure in recording the whereabouts and doings of the various members of our class, but unless I am informed of changes of residence and other happenings of our fellow-graduates, it is next to impossible for us to be well represented in each edition of our valuable Journal.

I am always willing and anxious to act as your class reporter, and beg of you to keep me informed of conditions, which you can do easily by mailing a line to

Fraternally yours,

GEO. J. DÜRR.

N. B. It is with pleasure that we record the fact that on February 7th, George J. Dürr, the reporter of the '95 notes, became the happy father of a Beautiful, Big, Bouncing, Baby Boy—"Beautiful," beyond belief ; "Big," physically ; "Bouncing," because he will probably require lots of it ; "Baby," by birth ; "Boy," by behaviour,

in the latter respect emulating his father. The members of the class of '95, and the Alumni Association, certainly have good cause to congratulate Mr. and Mrs. Dürr, and the same are herewith extended to the happy couple.—Editor.

'97 Notes.

Our class was very well represented at the Alumni Ball, held January 31, 1900, at "Lenox Lyceum," which was one of the grandest affairs ever held. This is self-evident, for synonymous with the name of Fred. Borggreve is the word "Success." Our class was honored by S. S. Shears as floor manager, Lant, Remele, Cohn, *Gschwind*, Kaiser and a few more. I was too busy, being on the "Press Committee." I was *pressed* into service, looking after the usual gathering of pretty girls, such as only the Alumni can have.

Born to Mr. and Mrs. F. Allen Brooks, at Tarrytown, N. Y., a son, February 3, 1900. With this information our little Chesterfield lays claim to my old class title "Pop." He tells me the boy is a beauty; no one who knows our Brooks, would doubt it.

E. Louisa Fellows, our lady of the classical "Boston," is said to be teaching school in Texas. Seems incompatible, does it not? Boston—Texas.

Our Dead Ones' List.

Teddy Kaiser, of de Bowery; Koch, better known "*loch*"; Shears, of H₂O fame; Florence, not of Italy; Slattery, with that good German name; *Diamond* "Dick" Devine, of Babyville; Herbert Conrad, not comrade; *Gschwindt* or *Two Beers*; Linder, our Swedish boy; *Baron* Milne, of Hand-book fame.

Another one has gone to his doom. "Our 'Squire Nothrup, the anti-pennyantist" of West 61st street, was married recently at Beaver Dam, N. Y., to a lady from his old home town. From what I can learn, several of our class are also booked for the near future to enter on the field of matrimony. Good luck be with you.

'Tis sad, but true, "*Texas*" Gilman is to leave our midst, having resigned his position at Tsheppe & Schurr's, Columbus avenue, corner 75th, Manhattan, to go to the far West to Messrs. Stewart Holman Drug Co., Seattle, Washington, where he is to hold a very responsible position in their "crude drug department." With you, old man, goes the best wishes of our class. And when your thoughts turn back eastward drop a line to me; let us know of your doings.

Next event will be the "Alumni Day." Now, all wake up; let us make a showing, the one our class deserves.

Florence & Slattery, of Maltine fame, have gone into business under that name at 13 Grant Square, Brooklyn, and are said to be doing excellently.

Gordon Hager said he missed the "Alumni Ball" by a length. The train refused to obey his demands to carry his avordupois to New York, as he reached the depot just in time to be too late.

Is *Gschwindt* a credit to Utica? Or is Utica a credit to *Gschwindt*? Send your answers to the class reporter.

E. A. M.

'00 Notes.

Shades of Moses! what are we coming to? Such a headache. Rats! fire! police! Have you heard the news, or, rather, are you in the news? The Executive Committee for the class has been appointed. Wonder of wonders! "Talk about your coons a having trouble;" well, I guess our class has troubles of its own. But as to the story. Firstly. A meeting of the class was held and by vote of the class a committee of the following men were elected: From Section One: Messrs. M. A. Kaehrl, F. Freese,

L. Jorgensen and T. F. Endress. From Section Two: Messrs. L. B. Decker, W. H. Wilson, A. E. Colcord and J. A. Murphy. From Section Three: Messrs. H. R. Reynolds, J. P. Regan, G. W. Morse and H. B. Winne. Mr. F. Freese was subsequently chosen chairman of this committee. Now this is the beginning. Another meeting was held shortly after this, and then the news was gently broken that another committee had been appointed by the Class President. The reasons given for this action was that the elected committee was made up of that renowned mystery, the Secret "Frat." It seems that the other click had been shut out in the election (too bad, for they are a worthy set of good, honorable young gentlemen). The discussion at this meeting waxed sore. So warm did it become, in fact, that the smoke began to ooze out into the hall, and John, our worthy janitor, came very near turning in an alarm, thinking that the building was on fire. It was at this point that the esteemed Professor and Vice-President of our College arose to the rescue and endeavored to pour upon the HO some WOQ. Among other things he said: "Young gentlemen, I am an old man" (we all knew this; he is a Grand Old Man); "I have been A.M.'d and Ph.D.'d, yet I'll be L.L.D.'d if I ever witnessed such a discussion as has transpired here to-day. You may all be M.D.'d or F.C.S.'d for all I care, but I consider that the committee first elected is the one that is really entitled to hold office." Then he sat down, amid rousing cheers of the friends of the committee in office, and a series of groans from the friends of those who were appointed by the President. So ended the battle. But the war is not over yet. Another assault will be made in the near future.

"Why should the spirit of mortal be proud?

Like a swift flying meteor, a fast fleeting cloud;
A flash of the lightning, a break of the wave,
He passeth from life to his rest in the grave.

"'Tis the wink of an eye, a draught of the breath,

From the fullness of life, to the paleness of death;
From the gilded saloon, to the bier and the shroud,
Oh, why should the spirit of mortal be proud?"

Bye the bye, I almost forgot to give the names of the illustrious men who were appointed to serve on the Executive Committee by the Class President. Well, here they are: Messrs. M. Kaliski, E. J. Martin, P. J. Costello, C. A. Sexton, C. A. Lotz, S. May, C. A. O'Connor, F. A. Havey, T. W. Cady and H. R. Hamilton. Now kindly glance at the list given above and you will readily see that the committee appointed by the president is one which is composed of some of the most intelligent and bright fellows of the class. Still, perhaps, it is best that they should not wear out their brains with the laborious labors of arrangements of graduation.

How many of the fellows attended the Annual Ball of the Alumni of the College. Don't all speak at once. Well, it was a corker. I was deeply grieved to see the way that Wilson and Green took the affair to heart. And for Martin (the boy with the Auburu hair) he took things by storm. Say, he is a handsome fellow. Utica should be proud of him.

Talk about 16 to 1. Ask Kaehrle to work out this problem. Pin—\$3.80—\$2.25. Enough said.

I believe that several of the young men connected with our illustrious class arranged to get a square meal, and to this end arranged a party and made an attack on the bill of fare of Pabst, 42d Str. and B'way. Bye the bye, they each had to fork up \$2.00. Hope that they enjoyed themselves.

Say, O'Connor, how is Harlem?

(I'll never go there any more.)

Several gentlemen of Section Two should go hump themselves and see that they apply themselves more industriously and grasp the mysteries of plant life and not to see which one can be the first candidate for an asylum. It takes a good deal to get Professor Rusby angry, but when he is riled, just watch out. There's trouble then. Gentlemen, kindly leave the young ladies quite alone. Professor Rusby is very able to take care of them, and if he should need assistance, Dr. "Harry" is ready to lend a helping hand. So there you are.

Mr. Endress and Lukin should have tickets printed and arrangements made for a regular prize fight under the Horton law. I'm sure that they would look well facing each other in a 24-foot ring. Let them get together and settle their troubles in this way. They will thereby soothe their feelings and increase their wealth. Did you see them plugging each other the other day? Kaehrle acted the good part and separated them. You should see them scatter when Kaehrle made his appearance.

Langheinz still is seen hanging around College trying to make folk believe his is working. He should be shoveling snow.

Lotz still says nothing and saws wood.

Paisley continues to smoke the boss's cigars.

Pfaff is raising a mustache, also much noise about College.

Our President, "Frankie" Schaeffer, still is the best looking man in the College.

I guess I had best discontinue myself once, already yet at present, or the Editor-in-Chief will be jumping all over me for taking up so much room in the papers. So, Pill Rollers and Bottle Washers, I will bid you once more adieu, with many kisses and much love, from

Little "Robbie,"

'OI Notes.

The Alumni Ball, given at Lenox Lyceum on the evening of January 31st (and, by-the-way, morning of February 1st) was a most enjoyable affair. Our class was well represented on the floor and in the box reserved for us, which was tastefully decorated with roses and evergreens. To give a fair idea of the number of juniors present, I will say that the refreshments (solid) gave out long before the crowd was served. I might say that the liquid refreshment got low. That goes to show that the juniors were there in full force.

The day after the ball it was much easier for a certain junior to describe a "Rum Cough" than a Ruhmkoff coil. Was he at the ball? Well!

The ladies of the class claim that Miss Russ was to represent them at the ball. Wonder where she was, probably out o' sight.

The Rhode Island Volunteer claims that his honorable discharge entitles him to wear a shoulder-strap on his upper lip. One thing it does not entitle him to, *i. e.*, taking a "Knapp" during a lecture.

The force of gravitation seems to have a greater exerting power around Mr. White's desk, Pharm. Lab. than anywhere else. Proof, broken evaporating dishes, etc.

In Pharmacy Quiz., Dr. Hoburg asked Mr. Moses to tell all he knew about Osmosis. Mr. Moses rose from his seat and in a dignified way stated that "Oscar" was 2 years older than himself but declined to give any further information as he thought the Doctor had no business to get so familiar with his brother Oscar, especially when the Doctor had never seen him.

"Of what does a telephone consist" quizzed Prof. Furnival in a recent Physics Quiz. "It consists of a battery and a piece of wire," was the prompt answer from one of the stars.

A student in Sect. I. was asked how coffee was clarified. He said it should be allowed to run through charcoal. I wonder where he gets off?

Mr. R——n, one of the "wise seniors" was somewhat humiliated the other day by being told by one of "those Juniors" that he had made a mistake in the stockroom, Pharm. Lab., by giving Aqua Distillatæ instead of dilute Acetic Acid. Mr. R. now tries to lay the blame upon the shoulders of Mr. Hebner, a junior who works in Mr. R's place senior days. There is no use of your trying to get out of it, Mr. R., a junior would know better.

"What people don't know never hurts them any" is evidently the motto of at least *one* Hoboken Druggist but his junior clerk gave the snap away when in reply to Dr. Hoburg's question as to the preparation of Aqua Destillata he said it was accomplished by means of filter paper, cotton or other porous media.

Schwallies "thirst" for knowledge has grown on him to such an extent that he regards all lectures as one huge joke.

That some of the students (Junior and Senior alike) treat the U. S. P. much as they would a family bible is proven by the fact that Foolke wants to know WHERE he can find an official method for preparing H_2O_2 .

It was a great shock to his friends to learn that Gleason of Sec. III. had become a monopolist and when asked to define a "gas" said it was an æriform body used for illuminating and costs 65c. per 1000 ft.

If Dr. G. A. Ferguson would devote the Mathematics hour to instructing Sec. III. in "kindergarten work" he MIGHT get a correct answer occasionally, but we are not sure.

A man like Schwartz who can get a yellow precipitate by heating Sublimed Sulphur would have no difficulty in selling gold dollars for 90c. each.

We wish to announce that February 31st is the date of the race between Banzhoff and Allen for the first place in Miss R——'s favor, to be held at Madison Square Garden. Admission free, winner to take entire gate receipts.

It must have been an Ingersoll dollar-watch that Zink so recklessly fired on the floor just to kick up a little excitement.

Since the "living pictures" disappeared from 69th street, Cole has been more attentive.

There is a "Wild" man in Sect. I.

Iky is very much disgusted with his classmates. Do you wonder why? Ask Hill; he knows.

Gannon, don't try to lead that senior astray. If you don't stop he will move up to Harlem.

Gentlemen, when prompting a friend in a quiz you might do well to remember that you are not on the stage, so an ordinary whisper will do just as well.

What's the matter with Lorce's voice? Is it weak, or is he bashful?

In his first lecture on toxicology, Dr. Dickman spoke of some in the lecture-room who were able to write a history on one of the important subjects of the lecture. Look out, fellows, he's "getting on to" the Seniors; don't let him "get on to" us.

Mr. O. M. Arguellis was recently elected as "mascot" for the class of '09. He's little, but O, my! Success to him.

Dr. Deikman, in his early lectures, condemned a graduate with a substituted bottom. But how about the 2 oz. graduate in the stock-room, Pharm. Lab., from which Mr. Reagan dispenses Fe_2Cl_6 . Was that a rubber bottom or the cover of a tin baking-powder can?

The "wise (?) seniors" who look upon "those juniors" as their inferiors ought to get the juniors to take them out for an evenings fun, and see who will come out of it best. The seniors are not in it, are they R——?

Students in Section I. have no use for dictionaries, as Webster himself is in the section.

The girls say: That Mr. A——n is just as sweet as he can be.

That no gentleman will smoke in class-meeting when ladies are present.

That Mr. H——t is just awful; he talks too much.

That they don't want their names mentioned in the JOURNAL.

That Mr. H——r has lovely red cheeks and that he p——ts, but he don't.

Elegy.

WRITTEN IN A N. Y. C. P. LABORATORY.

Oh! 1900 Post Graduate Class!
 (Eminently known for breaking glass),
 Ye have entered upon another course,
 No wonder poor souls, ye look so cross.
 Bacteriology! Ah, how fine!
 A branch of science, so divine,
 'Twas hard to part from friends above,
 And sever connections, with studies we love;
 Yet, in descending, to a floor below,
 Many wise things, we hope to know.
 After pursuing, the analysis of plants,
 We trust, to be, acknowledged savantes;
 Provided, we successful shall be,
 In obtaining that worthy, P-h-a-r.-D.
 If not, our laboratories furnish relief,
 C_6-H_5-OH , in brief,
 But woe, betide ye who taketh this mean,
 Yea, the folly of it, is readily seen
 Study, ye mortals, and then wilt thou pass;
 Uphold the standard of our Post-Graduate Class.

Our friend, the "Analytical Balance," has been succeeded by the "Microscope," accompanied by the "Micrometer," in lieu of the "Rough Rider."

O, how profusely those NaCl laden tears fell, as we bade farewell, to the Pharmaceutical Laboratory! For corroboration of the above, apply to Mr. Wm. A. Hoburg, Jr.

Personals.

Purdy—Our "Old turn Key."

Stern—Hast thou still hunger?

"Wetstein"—The latest acquisition to our class.

Conlin—The last curl is at last replaced.

Stubenrauch—No longer cans't thou wander, to confiscate laboratory paraphernalia.

Wyckoff—Why so frequently late for lectures?

Thomas—What's the matter with Kjeldahl?

Last but not least Van—"2000 lbs."

FANNY A. BLAN.

The Journal of Pharmacology

EDITED BY THE ALUMNI ASSOCIATION OF THE
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CONTENTS

The Microscopical Examination of Paper	45
SMITH ELY JELLIFFE, M.D., Ph.D., and CHAS. F. PFISTER, Phar.D.	
Distinctions Between the Official Hamamelis and that Collected in the Spring	52
GRACE E. COOLEY, PH.D.	
The So-Called Danger from the Use of Boric Acid in Preserved Food	53
DR. OSCAR LIEBRICH.	
Examination Questions of the Board of Pharmacy of the City of New York	55
Has Commercialism Superseded Pharmaceutical Training	58
President's Letter	
Join the N. Y. S. P. A.	59
The Toothbrush Plant	60
The Candle Tree	60
Alumni, College and Class Notes	61-66



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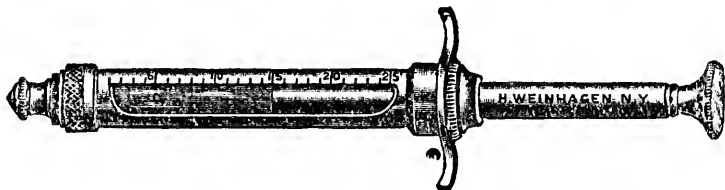
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The Microscopical Examination of Paper.*

BY SMITH ELY JELLIEFE, M. D., AND C. F. PFISTER, PHAR. D.†

(Continued from February Number.)

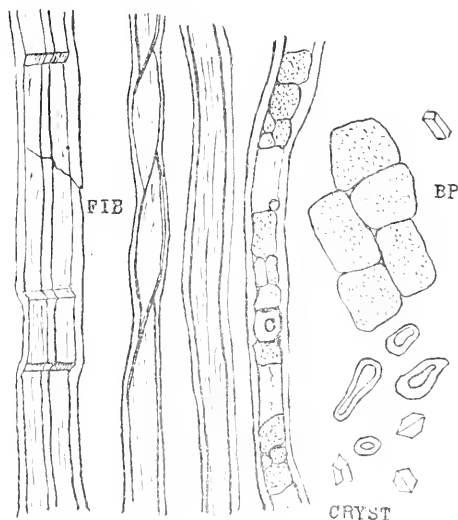


FIG. 6. Paper Mulberry Fibers.—Showing Fibers with C. Cell Contents and B. P., East Parenchyma and crystals.

* Abstracted and translated from F. R. von Höhnelt's, *Die Mikroskopie der Technisch verwendeten Faserstoffe*.

† Microscopical Laboratory College of Pharmacy, City of New York.

10. *Wood Fibers*.—By this name is understood fibers obtained from wood by mechanical means. In wood fibers, therefore, are found all of the elements of wood. Wood-fibers are not only readily recognizable microscopically but their origin can usually be ascertained with definiteness.

For the fabrication of wood-fibers soft varieties of wood are commonly employed such as pine, spruce, fir, aspen, linden, and willow.

The wood-fibers obtained from evergreens are characterized by being composed of tracheids possessing large bordered pores. These are usually flat, and by the grinding process, become more or less torn, and have blunt broad ends; they have relatively thin walls (Fig. 7).

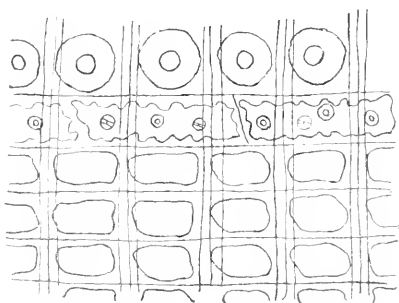


FIG. 7. Tracheids and Medullary rays of White Fir.

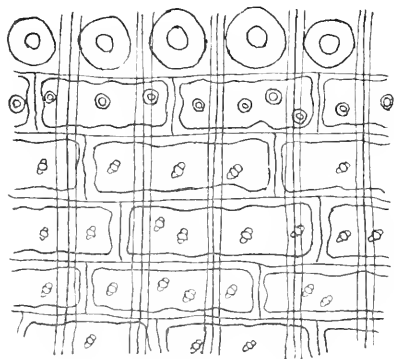


FIG. 8. Spruce Tracheids with medullary rays and characteristic Border Pores.

The wood-fibers of foliage trees do not possess these characteristic tracheids, but in their places are found numerous short and broad vessel-fragments which are thickly covered with small flattened bordered pores. Besides these there are thin fibers (libriform or wood-fibers) which, in the case of the mentioned soft woods, are but little thickened.

The tracheids do not afford much clue as to which variety of evergreen is used, for they are all much alike in structure. On the contrary, however, the medullary ray cells which occur abundantly in all wood pulps (wood-fibers) differ very much in the particular evergreen trees. Here are briefly given the most important characters by which they may be distinguished (Figs. 7, 8, 9). The medullary ray cells appear in wood-fibers mostly in parallel rows of brick-shaped cells. If all of the cells are provided with simple, roundish pores, the fiber in question is pine wood. If besides these simple, porous medullary cells are also found some which exhibit small, bordered pores, it is probably spruce wood (Fig. 8). If, however, a portion of the medullary cells have large and striking indentations reaching far into the lumen (in which small bordered pores may be seen), while the other portion shows a row of large and apparently roundish quadrangular

holes that are about as broad as the lumen, then the fibers are probably derived from firs (Föhrenholz, Fig. 36).

With reference to the differences found in the fibers of the principal foliage trees that are used in the fabrication of paper, they are succinctly as follows :

The wood elements of the willow, the aspen and the linden are very thin-walled ; those of maple (hard maples) are thicker walled ; if the red maple is used, the fibers are thin-walled. The wood of linden shows portions of vessels and tracheids which possess in addition to bordered pores also a broad spiral band. The vessels measure up to 60 mikra in width. Maple wood also sometimes has vessel portions provided with bordered pores and spiral markings, but usually either the bordered pores or the spiral bands alone are present. Willow and aspen have similar wood with ducts that are entirely covered with six-sided bordered pores.

Paper or paper-material (Papierstoff) containing wood-fibers always gives the lignin-reactions very distinctly. For instance aniline sulphate gives a golden yellow coloration, etc.

It is to be noted that there are wood-pulps, but no papers, that are made up entirely of wood-fibers. Therefore, in papers in which lignin (holzstoff) has been detected one must also search for other fibers which can be distinctly seen after the lignin tests have been applied.

11. *Wood Cellulose*.—When wood is acted upon by chemical means (dilcaustic soda under high pressure, etc.) and thus decomposed into its component parts, we obtain a substance called cellulose or wood-cellulose.

Whereas wood-fibers respond strikingly to the lignin tests, paper containing cellulose reacts but very feebly or not at all.

Not alone does the lignin become destroyed in the macerating process, but many of the characters of the wood elements become altered, so that under the microscope wood-cellulose is not as readily recognized as are wood-fibers.

Wood cellulose, it appears, is prepared usually from the long-fibered evergreens. The fibers appear broad, ribbon-like, twisted in many places and often resemble cotton fibers (but broader); thin-walled ; here and there may be seen large bordered pores, but always indistinctly.

They are best brought to view by treating the fibers with zinc chloroiodide, whereby the majority take on a violet color, others a dirty violet to yellow coloration.

The fibers are 30 mikra to over 60 mikra in diameter and show no dislocations. They are also but little torn, whereas wood-fibers are much tattered and torn. The ends are mostly broad, thin-walled, blunt and rounded off. But few medullary ray elements are to be found, and they show only indistinct structural characters.

From the above it may be seen that, even without resorting to chemical means, lignin can with greatest ease and certainty be distinguished from wood-cellulose.

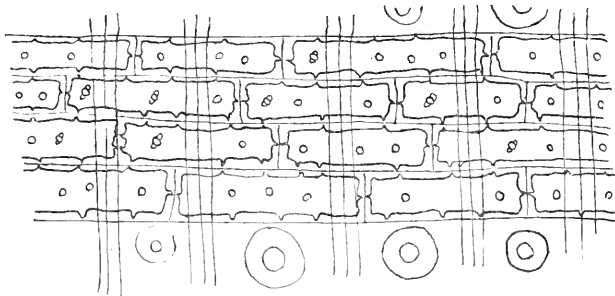


FIG. 9. Pine wood showing Tracheids, Medullary Rays and Border Pores.

12. *Hop-Fiber*.—This is used principally for the fabrication of the finer qualities of papers. In these, however, the individual fibers are so much destroyed that they are made out with difficulty.

13. *Parchment Paper* (Vegetable parchment, phyto-parchment, papyrine, membranoid) examined under the microscope is seen to consist of much swollen fibers (mostly cotton or flax changed into amyloid) which are directly colored blue by iodine. Parchment paper is therefore easily distinguished microscopically from similar papers and products.

EXAMINATION OF THE COLORING MATTERS OF PAPER.

Chemists usually employ macroscopic means to detect the coloring matter of colored papers, *i. e.*, by means of reagents that give certain reactions with the various pigments. These reactions may be found described in technological works such as Bolley's, Post's and others. The work of J. Erfurt "*Das Färben des Papierstoffes*," Berlin, has special reference to the coloring (tinting) of papers, and on page 164 the means of detecting the coloring matters are given.

When one has to determine the coloring matter of very feebly tinted papers that usually pass for white, it becomes necessary to apply micro-chemical tests; the same reactions as above, however, are used.

White papers usually contain some blue coloring matter which occurs either in small granules or as a coloring of the fiber. The smalts, ultramarine and also Berlin blue exhibit these granules, whereas anilin blue logwood and indigo color the fiber evenly.

The reactions which indicate what kind of blue is present in the white paper are as follows:

(a) Berlin- and Paris-blue are destroyed by alkalies. Chlorinated lime does not change the granular coloring matter.

(*b*) Logwood is decolorized by chlorinated lime, but resists the action of alkalis. Wood-blue is colored red by hydrochloric acid.

(*c*) Ultramarine is decolorized by hydrochloric acid with evolution of hydrogen sulphide.

(*d*) Indigo (found almost solely in papers obtained from blue rags) is destroyed by chlorine water and nitric acid, but resists the alkalis.

(*e*) Aniline blue is quickly decolorized by caustic soda and acquires a dirty-red coloration. Chlorinated lime decolorizes it completely. Aniline blue is frequently used in conjunction with Berlin blue. If such a paper be treated with chlorine water, Berlin blue remains behind; treated with hydrochloric acid, the paper remains unchanged, but in the presence of logwood a red coloration is produced.

(*f*) Smalts occur in paper in the form of small shivers or scales that are not attacked by either acids or alkalis. Thin smalt-shivers appear almost colorless under the microscope. Ultramarine and Berlin blue granules are much darker. The former are translucent and light-blue; the latter, especially when thick, are black and translucent at the edges only.

TESTS FOR THE FILLING OF PAPER.

The filling material is put in for the purpose of filling up the spaces left by the entwined fibers; to make the paper heavier and denser, and to give it a certain body. It is thereby also rendered whiter and less transparent. The filling material consists usually of starch, sulphate of calcium (pearl hardening), and, in coarser papers, also of powdered gypsum (annaline), heavy spar (sulphate barium), and finely elutriated kaolin (benzin).

The starches usually met with in papers are: Rice-starch in Japanese papers; wheat-starch in European silk-papers; potato-starch (in the proportion of 2-8 %, in letter- and other fancy papers).

Papers sized in the mass almost invariably contain starch.

The starch also serves the purpose of "fixing" the inorganic substances used in the filling material.

Annaline is unburnt anhydrous gypsum; pearl-hardening is gypsum in a very finely subdivided condition, obtained by the action of sulphuric acid on calcium chloride.

The above-named inorganic "filling" substances may be recognized by the various forms they exhibit under the microscope; and the three chemical compounds represented by gypsum, kaolin and heavy spar, may be readily distinguished from each other microchemically.

THE SIZING OF PAPER.

These necessary products may also be determined by micro-chemical means. Paper-size is either animal glue or a vegeto-mineral glue. At the present time the latter is used almost exclusively and is composed princi-

pally of a clay and resin soap with some (1-2 per cent. of the weight of the paper) starch.

In England, however, animal glue is chiefly used, though occasionally a soap made of clay and wax is also employed.

The above-mentioned clay and resin soap may be recognized by the presence of starch granules. Animal size affords a brick-red coloration with Millon's reagent (mercurous nitrate). Clay may furthermore be made out micro-chemically in the ashes of the paper.

PAPERS WITH CELLULAR STRUCTURE.

The so-called Chinese rice-paper and the papyrus of the ancients differ completely in their microscopic properties from the papers so far considered. They consist principally of thin-walled, empty parenchymatic cells and are obtained from the pith of soft monocotyledonous plants, by cutting with a knife.

1. Chinese, so-called rice-paper, is obtained in a spiral form from the pith of *Aralia papyrifera* by means of a simple appliance. The sheets thus obtained are then pressed and reach a size up to 11 square decimeters. Each sheet consists of but a single piece 250-300 mikra in thickness.

Smaller and poorer qualities are composed of strips, 1-2 cm. wide, obtained from the pith by cutting radially. For this reason the latter sorts appear striped longitudinally. This is, however, also partly due to the fact that radially the pith is not homogenous, being made up of layers of varying thickness.

The microscope reveals polyhedric parenchymatic cells filled with air which may readily be replaced by alcohol. The cells are elongated longitudinally and measure 135-180 mikra in length and 54-92 mikra in width. They are provided with small pores and many contain crystals of calcium oxalate.

2. The papyrus of the ancients was obtained from the tissues of the stalk of *Cyperus Papyrus*. This tissue consists of a loose snow-white parenchyma, resembling elderpith, in which are imbedded numerous fibro-vascular bundles running longitudinally. The intercellular spaces, which occur abundantly, also run in the same direction.

On the fabrication of papyrus-rolls the very thin sheets cut from the pith are pasted upon each other, usually three layers deep, and not parallel, but at right angles to each other. For this reason antique papyrus shows stripes, crossing each other, caused by the fibro-vascular bundles.

The sheets cut from the pith are, according to Wiesner, about 80 mikra in thickness.

The parenchyma cells are large and thin walled, and usually contain small crystals of calcium oxalate.

The fibro-vascular bundles, even in older samples, are well preserved,

and their histologic structure may be made out very clearly by means of the microscope.

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Notice.

The article, Urine Analysis by the Pharmacist, contributed by Dr. George C. Diekman, will be continued in the April number.

Distinctions Between the Official *Hamamelis* and that Collected in the Spring.*

BY GRACE E. COOLEY, PH.D.

The leaves of *Hamamelis Virginica* have matured their tissues before the end of May, and little change takes place in them before they fall in autumn. When treated with chloral hydrate or caustic potash, the leaves give up oily matters, which collect in globules or masses on the slide. This oil is very readily soluble in alcohol. It stains only faintly with alkanet and takes only a faint yellow color with strong iodine. Osmic acid stains it, but so it does the tannin present, and the reaction is obscured. A strong odor of Witch Hazel is given off, when caustic potash acts on the leaves.



Fig. 1.

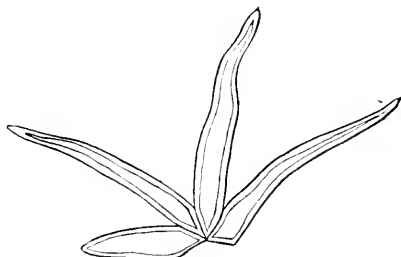


Fig. 2.

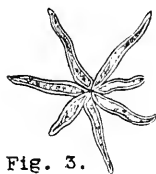


Fig. 3.



Fig. 4.

There is more tannin in the leaves in the fall than in the spring. Particles of *Hamamelis* powders sprinkled upon the surface of a drop of a 2% solution of chloride of iron blacken in two minutes, if the leaves were collected in the fall; and require three minutes to noticeably color if from leaves of a spring collection.

* Contribution to the work of "Research Committee C" of the U. S. Pharmacopœia, from the Botanical Laboratory of Wellesley College.

Compound hairs are present on the under surface of the leaves, and are made up of long, pointed cells, which are so fitted together at their bases as to form stars of from five to twelve arms. Many of these hairs disappear during the season, and the leaves in the autumn are comparatively free from them. Those that remain, undergo, during the summer, certain marked, though gradual changes, which may together be taken as tests for the collections made in the fall.

The cell-wall of the hair is comparatively thin in the spring, and thickens gradually, so that in the fall, only a dark line marks the lumen of the cell, in many of the hairs.

In the spring, the hairs contain granular and oily matters, which disappear as the season advances. In the spring too, the cell-wall is colorless, but in many cases becomes discolored as the hairs grow older, the discoloration beginning at the base of the hair. From the above observations, we may be sure that powders which contain a relatively large proportion of hairs with small lumen, thickened, and yellow walls, and scanty contents, are made from leaves collected in the fall. On the other hand, in the collections of the spring, thin-walled, vigorous cells are the rule.

The difference in the thickness of the wall is graphically shown in the sketches. Fig. 1 represents a few of the cells from a hair of a leaf collected in September. Fig. 2, in contrast, represents cells from a hair on a leaf collected in May. Both are magnified 275 diams. Figs. 3 and 4 represent entire hairs taken from leaves collected in May and September respectively. They are magnified 125 diams.

The So-called Danger from the Use of Boric Acid in Preserved Foods.*

BY DR. OSCAR LIEBREICH.

In a thorough investigation on the action of borax and boric acid I have not been able to demonstrate that these two bodies are included in the so-called toxic-acting substances in so far as they act through absorption from the intestine. My researches show that the misleading and frequently disseminated statements to the contrary are at present without foundation. This preliminary question must naturally be settled before the hygienic and legal aspects of the subject can be taken up—as to whether, and in what quantities, it is allowable to use these two substances as preservatives for articles of food. These questions are too often regarded, not from the purely scientific standpoint, but in the light of their value in the interest of political and agrarian parties in different countries. This is shown by the frequent republication of old and quite inconclusive investigations, particularly by the daily press, statements

**Lancel*, London.

which are likely to mislead both legal and public opinion. It is not my intention to enter now into my investigations on this subject. These will appear in the *Vierteljahrsschrift für gerichtliche Medicin* and will shortly be published by Churchill in pamphlet form. The reason for my again taking up these questions is an article by Dr. H. E. Annett on Boric Acid and Formalin as Milk Preservatives which appeared in *The Lancet* of November 11, 1899 (p. 1282). It would be quite sufficient only to criticise this investigation, but it seems advisable also to make some introductory observations.

In the first place Dr. Annett cites the following from the report of the committee of the Local Government Board: "There is no doubt that boric acid, if taken in large quantities, would be injurious to health, but we have not sufficient information to show whether such minute quantities as are generally added as preservatives would be regarded as having that effect, and more exact information is wanted before it can be decided whether a process which *prima facie* may be regarded as intended to prevent the loss of valuable foods must be held to be prohibited by law." Dr. Annett adds: "It is remarkable that that 'sufficient information' on the action of minute doses of 'preservatives' habitually taken after the lapse of a period of almost ten years still is not forthcoming." Dr. Annett is quite right. It is, indeed, strange that during ten years of experimental work, taken part in by a great number of investigators, it has not been forthcoming, and that during these ten years of experience of practising physicians there has not been forthcoming any instance of injury to health from the administration of small doses of borax and boric acid. Particularly so, in my opinion, for during this time a very excellent opportunity has been afforded for practical observation, because the use of boric acid in small doses has been very extensively resorted to. This gives evidence to the experimenter that the existence of an injurious influence of small doses could only be demonstrated with great difficulty, if indeed it exists at all. One would expect that Dr. Annett had succeeded in obtaining the required proof. However, this is not the case. He begins by enumerating the injurious effects of excessively large doses in animals and confuses these with therapeutic observations. In such a scientific criticism it would have been fairer not to have suppressed the facts that excessive doses administered by the mouth cause only passing harm in man and that the injection of excessive doses of borax and boric acid in the body cavities of patients produces distinct intoxication and even death. This is well known and not to be wondered at; but from this latter fact no conclusion can be drawn as to their toxicity when administered through the stomach and intestine, for the purpose of forming a judgment on the use of small quantities for the preservation of food. We are aware that many substances are harmless in the intestinal canal if

swallowed, but that if injected subcutaneously or into the body cavities they act as poisons. Further, Dr. Annett states that the most eminent authorities of this country, who, by means of *The Lancet*, Special Sanitary Commission on the Use of Antiseptics in Food of 1896, published their opinions on the question of food preservatives, were unanimously of opinion that the use of antiseptics in food was injurious to health. Reference to the columns of *The Lancet* convinces me that this statement is totally inaccurate. It is only necessary to cite the words of two authorities. Professor Halliburton* says: "I and all of us are continually taking such food (especially milk treated with boric acid) without any appreciably bad results." And Professor Bradbury† says: "I am disposed to think that the presence of small quantities of salicylic, boric or benzoic acids, in sufficient quantities to preserve it is not injurious to health."

(To be Continued.)

Examination Questions of the Board of Pharmacy of the City of New York held February 19, 1900.

CHEMISTRY.

1. Define the following terms :

A. Adhesion	C. Porosity
B. Cohesion	D. Capillarity
2. How many grammes of Oxygen can be obtained from one avoirdupois pound of Potassium Chlorate?
3. Give the chemical title of each of the following :

A. Na_2O_2	D. $\text{Ca}(\text{ClO})_2$
B. $(\text{NH}_4)_2\text{HPO}_4$	D. $\text{K}_2\text{Cr}_2\text{O}_7$
4. Name three univalent, three bivalent and three quinquivalent metals, giving the symbol of each.
5. Give a characteristic test for each of the following :

A. Ammonia	C. Acetic Acid
B. Calcium	D. Phenol
6. What is a compound radical? Give an example each, of a univalent, trivalent, and quadrivalent radical.
7. Write the chemical formula of each of the following :

A. Iron Trioxide.	C. Copper Suboxide.
B. Proto-chloride of Tin.	D. Potassium Permanganate.
8. Name the more important products which result from the destructive distillation of wood.
9. Write the formula of Sulphurous Anhydride. State how it is prepared, and give a test of identity for it.
10. State the chief properties which characterize the inorganic acids.
11. Write the formula for Ethane, graphically. Show also by graphic formula which acid and alcohol (both monatomic) are derived from it.
12. Name an official tri-atomic alcohol. Write its formula, and give source from which it is obtained.

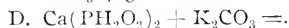
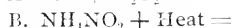
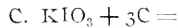
**The Lancet*, Jan. 2, 1897, p. 59.

†*Ibid.*

13. What is the source of Benzol? Write its formula and name the compounds which it forms with nitric acid.

14. How would you accomplish the separation of Arsenic from Antimony, both being contained in the same solution?

15. Complete the following equations:



PHARMACY.

1. How many grains are there in each of the following:

a. One avoirdupoise ounce,

c. One dekagramme,

b. One troy pound,

d. One decigramme.

2. Name the various causes which give rise to precipitates in fluid extracts.

3. Give details of a process for the manufacture of sodium salicylate. State what precautions must be taken to insure a white product.

4. How is tincture of ferric chloride prepared? Why does it sometimes precipitate upon standing?

5. How many grammes of diluted sulphuric acid can be prepared from 50 grammes of 85% sulphuric acid?

6. What is clarification? For what purpose is it employed and in what ways may it be accomplished?

7. Give the official process for the manufacture of spirit of nitrous ether. What impurities are often present in the finished product?

8. Name three common adulterants of volatile oils, and state how each one may be detected.

9. From what source is milk sugar obtained? How would you detect an admixture of chalk or kaolin?

10. How is collodion prepared? State the proportion in which the solvents are employed and name the official collodions.

11. Name three official drugs whose active principle may be extracted with diluted acetic acid, giving the title of the preparations in which this acid is employed as a menstruum.

12. What is the common source of alcohol? Give the title and % strength of each official kind.

13. How is glycerite of boroglycerin prepared? What results when water is added to it?

14. How would you determine whether or not a sample of honey was adulterated with artificial glucose?

15. How is pyrogallol obtained? Give tests of identity, and tests by means of which it may be distinguished from tannic acid.

TOXICOLOGY AND POSOLOGY.

N. B.—In giving doses, WRITE THE NAME OF THE DRUG and give the MINIMUM and MAXIMUM doses.

1. Which one of the mercurial preparations is most frequently employed for suicidal purposes? What is the best antidote for poisoning by it? How is the antidote used and what is formed?

2. Describe the characteristic symptoms of and give the emergency treatment for Strychnine poisoning. Carbolic Acid poisoning.

3. What would you give for poisoning by any of the Barium salts? Copper salts?

4. In Morphine poisoning, what oxidizing agent is employed and what alkaloid should be used for its physiological effects?

5. What emergency treatment should be employed for poisoning by matches? By Salt of Sorrel?
6. What antidote would you give for poisoning by Iodine? By Fluid Extract of Ergot?
7. What is the dose and antidote for overdose of Mercuric Cyanide? Of Spirit of Camphor?
8. What emergency treatment should be employed for poisoning by Paris Green? By Acetanilid?
9. What acid is considered a good antidote to the alkaloids? Why?
10. Give reason why a "shake well" label should be placed upon some mixtures?
11. What restrictions does the law place upon the sale of poisons by pharmacists?
12. What is the dose of Arsenous Acid, Carbolic Acid, Gallic Acid, Mild Mercurous Chloride, Potassium Iodide?
13. What is the dose of Creosote Carbonate, Fluid Extract of Black Haw, Fluid Extract of Guarana, Oleoresin of Cubebs, Tincture of Ipecac and Opium?
14. What is the dose of Tincture of Aconite, Tincture of Indian Cannabis, Tincture of Strophanthus, Tincture of Veratrum Viride, Wine of Opium?
15. How large a dose of each of the following should you consider it safe, as a rule, to dispense in a prescription:—Antipyrine, Cocaine Hydrochlorate, Cherry Laurel Water, Diluted Hydrocyanic Acid, Strychnine Sulphate, Tincture of Belladonna, Tincture of Digitalis, Tincture of Nux Vomica, Tincture of Opium.

MATERIA MEDICA.

1. State five official drugs which owe their medicinal values to alkaloids. Give the official names of the alkaloids with doses.
2. Give composition of Tully's Powder; Gregory's Powder; Seidlitz Powder; Dover's Powder.
3. State five drugs that are coal tar derivatives.
4. What is apomorphia? How is it made? Give properties and dose.
5. Name the official oleates, and tell how they are prepared.
6. From what source and by what process are the following obtained: (a) Oil of Tar? (b) Oil of Cade? Tell the difference, if any.
7. Give the botanical names of the following: (a) Buchu; (b) Blood Root; (c) Hemlock.
8. Name two official drugs that belong to the Natural Order Labiatae.
9. Colchicum. What parts are official? Name its active principle. Name the official preparation.
10. From what drugs are the following Alkaloids obtained: (a) Emetine? (b) Hydrastine? (c) Piperine? (d) Santonine? (e) Eserine? (f) Atropine? (g) Codeine?
11. Mention four official vegetable drugs that are astringents.
12. What is the stigma of a flower? Give the official name of a drug which the Pharmacopoeia directs shall consist of stigmas.
13. Name two official drugs which belong to the class. (a) Insecta; (b) two which belong to the class Mammalia.
14. Hematoxylin. Give common name, part of plant used, habitat, medical properties.
15. Give the official name of the following:

Citrine ointment,	White precipitate,
Blue ointment,	White Vitriol,
Basilicon ointment,	Copperas.

The Journal of Pharmacology.

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Original Contributions, Exchanges, Books for Review and Editorial Communications: Address HARRY B. FERGUSON, PHAR.D., 115 West 68th Street, New York City.

EDITED BY HARRY B. FERGUSON, PHAR.D.,

WITH THE COLLABORATION OF

CHAS RICE, PH.D. H. H. RUSBY, M.D. V. COBLENTZ, PH.D. GEO. A. FERGUSON, PH.B.
GEO. C. DIEKMAN, M.D. JOHN OEHLER, PH.G. SMITH ELY JELLIFFE, M.D., PH.D.

Has Commercialism superseded Pharmaceutical Training?

Just at this time of the year, when the various colleges launch any number of young men on the Pharmaceutical sea, the question naturally comes uppermost in their minds whether the good pharmacist, or the good business man is the more successful. It must with truth be said, that the good business man, with bright ideas and a determination to carry out these ideas to a successful ending, is more apt to be successful in a financial sense than his more educated brother who, perhaps safe in the arms of his learned profession, rests serenely in the thought that business will carry on itself.

But the former, if he does not keep up his already gained knowledge of pharmaceutical manipulations, the newer remedies, his knowledge of Materia Medica, Toxicology, etc., and adds thereto, soon lapses into the veriest merchant who knows how to buy and to sell, but cannot keep in touch with the Medical Practitioner and inform him of the chemistry and action of the so fast cropping-up new remedies. It then becomes necessary for the new graduate to not only build upon his acquired knowledge, by the continued study of the various subjects which he was taught by his alma mater, but also to do his best to acquire a business training by connecting himself with a house of well known business ability. By keeping close watch and learning by such experience; the several years during which he is employed in such capacity, must prove of infinite value to him when he decides to do, what is the ambition of every graduate, open a pharmacy of his own. Pharmacy as a profession is not dead yet, there are many stores where pharmacy still has the upper hand; but it is to fact nevertheless, that in many stores, pharmacy is almost a side line and the many commodities such as toilet articles and sundries, form the principal part of the business.

After all a pharmacy is very much what a man makes it. If he be a good pharmacist, honest, and industrious, he will soon gather about him a clientel of both physicians and public, who respect such methods, and he will soon become an honored member of his chosen profession and a successful pharmacist; couple with this good business ability, and he is bound to succeed, providing that he "sticks to his last."

Many a successful pharmacist is carried away by the allurements of what seems to him a quicker way to wealth, and in following this rainbow of hope, he loses interest in his own affairs, and oftentimes is ruined. Then when he returns to his first love he finds a difference; he has lost track of things, and as a result he becomes disgruntled and morose and blames it all on pharmacy, while as a matter of fact, pharmacy has remained true to her colors.

Many a good man has been ruined by the pitfalls of commercialism, and while he may have been successful for some time, he some day oversteps himself and all is lost. I would say, therefore, beware of too much commercialism; do not allow yourself to be carried away by its dollars, but stick to your profession; "stick to your last," and become an honored pharmacist rather than a mere merchant. E.



President's Letter.

JOIN THE N. Y. S. P. A.

A great deal is said as to the little or nothing which is done for pharmacists by the various associations, but the great trouble is that so few affiliate themselves with the various associations and become active workers therein. All associations accomplish a certain amount of good which is a benefit to all.

At a recent meeting of the Manhattan Association, there were spirited arguments on various topics of interest to pharmacists at large, and no doubt at the coming meeting of the New York State Pharmaceutical Association there will be another lively time on the graduate clause.

It behooves every member of the Alumni Association, who lives in New York State to become a member of the N. Y. S. P. A., to work for the interests of the profession, and above all, to work for the "Graduate Clause." With us it is a matter of "strike while the iron is hot, boys," keep at it and we will win at last.

For fifteen years we have been working for the absolute recognition of the graduate, as the man preëminently qualified above all others and now that the time *is ripe* we must carry it to a successful termination. We

must of course pity such as have not been blessed with a collegiate education, but that is no reason why they should oppose graduation from a college as *the* standard; they themselves will always be just as highly honored as they ever were, but we, nevertheless, must regret the fact that they would necessarily have been even brighter lights on the pharmaceutical horizon had they received the benefits of college training.

To make it compulsory for every person practicing pharmacy in this State to be a graduate, must be our watchword, we must *nail* this to our flagstaff and defy anyone to tear it down. We must labor to enlighten our benighted brother so that he will at last see the light and swing over to our standard, and once he sees the light he will wonder how it was possible for him to remain in the dark so long.

Join your alumni association boys and help those who are helping you. Join the N. Y. S. P. A. and help the pharmacists of the State to find how to benefit the majority. And above all be at the meeting in Newburgh this year.

For the past few years the Alumni of the C. P. C. N. Y. have become factors in the State Association and we must become even more so.

Do not let the few do all the talking, but come to the meeting and talk for yourself; you no doubt have many good ideas which the members will be only too pleased to listen to and even act upon, so make up your mind *now* to be with us at Newburgh without fail.

Your President,

CHARLES S. ERB.

The Toothbrush Plant.—The genus *Gouania* embraces upward of twenty species of climbing shrubs, most of which inhabit the forests of tropical America. The most interesting of these is the *G. domingensis*, a common creeper in the West Indies and Brazil. In Jamaica it is called chaw-stick, on account of its thin, flexible stems being chewed as an agreeable stomachic. Toothbrushes are also made by cutting pieces of chaw-stick to a convenient length and fraying out the ends, and a tooth powder to accompany the use of the brush is prepared by pulverizing the dried stems.

The Candle Tree.—In the Isthmus of Panama the *Parmentiera cereifera* is termed the candle tree or Palo de Velas, because its fleshy, cylindrical fruits, often four feet long, having a striking resemblance to yellow wax candles, and a person entering the forests which are composed of this tree might almost fancy himself in a candle factory, for these fruits are suspended from all the stems and older branches. They have a peculiar applelike odor, which communicates itself in some degree to the cattle fattened upon them, but which disappears if, a few days previous to killing, the food be changed.—*West. Drug.*

Alumni, College and Class Notes.

CONTRIBUTORS.

Alumni Association, WM. A. HOBURG, Jr., Ph.G., 115 West 68th St., N. Y.
Alumni Notes, Socials, etc., and Classes prior to 1893, . . CHAS. S. ERB, 121 Amsterdam Ave., N. Y.
Bibliography, ADOLPH HENNING, Ph.G., 68 William St., N. Y.
Class '93, EUGENE F. LOHR, Ph.G., 508 Marcy Ave., Brooklyn, N. Y.
Class '94, FRANK N. POND, 226 Ninth Ave., N. Y.
Class '95, GEO. J. DURR, Ph.G., Randalls Island, N. Y.
Class '96, CHAS. G. H. GERKEN, Ph.D., 165 S. 4th St., Brooklyn, N. Y.
Class '97, E. A. MEINECKE, Ph.G., 14 Platt St., N. Y.
Class '98, T. B. FURNIVAL, Ph.G., 115 West 68th St., N. Y.
Class '99, THEODORE E. MEYERS, Dorranceton, Pa.
Class 1900, ROBERT B. LIVINGSTON, 115 West 68th St., N. Y.
Class 1901, ABERT C. THOMPSON, 115 West 68th St., N. Y.
Post Grad. 1900, FANNY A. BLAN, Ph.G., 115 West 68th St., N. Y.
Legal Notes, H. A. HEROLD, Ph.G., 108 Fulton St., N. Y.

Alumni Association Meeting.

MINUTES.

The regular meeting of the Alumni Association of the College of Pharmacy of the City of New York, was held Wednesday, February 14, 1900. President C. S. Erb in the chair.

There were present, Messrs. C. S. Erb, '86; F. Hohenthal, '81; F. Borggreve, '92; G. C. Diekman, '88; C. F. Schoenherr, '99; H. A. Herold, '94; A. Henning, '76; H. B. Ferguson, '95, and R. Gies, '95.

Minutes of last regular meeting read and approved.

Treasurer's report read, accepted and ordered placed on file.

Entertainment Committee reported progress.

Picture-Hanging Committee reported progress.

Dr. H. B. Ferguson reported for Committee on Papers and Queries, that Professor Coblentz would be pleased to give his lecture on Foreign Postal Cards, illustrated by stereopticon on Wednesday evening, March 7, 1900, if the same was agreeable to the Association.

A communication from Secretary W. A. Hoburg was read, explaining his absence from the meeting.

A communication from Dr. C. H. Bjorkwall, Editor of the JOURNAL OF PHARMACOLOGY, was read, and on motion was laid over to new business.

A communication from Mr. George Massey, Chairman of the Lecture Committee of the College of Pharmacy was read, inviting the members of the Association and their friends to attend a lecture on Experimental Physics, to be delivered by Professor Coblentz, on Thursday, February 22, 1900, at 8 o'clock P. M., in the lecture hall of the College.

It was moved, seconded, and carried, that a letter of invitation be sent to all resident members of the Association, inviting them and their friends to be present on that occasion.

A communication from F. P. Tuthill, Chairman Brooklyn Alumni Ball Committee, was read, inviting the members of the Alumni Association to attend the B. C. P. Alumni Ball on Thursday eve, February 22, 1900.

It was moved, seconded, and carried, that such an invitation be added to the invitation to the lecture on Experimental Physics.

Moved and seconded that this communication be received, carried.

A communication was received from Lawrence Jorgenson, Secretary of the Kappa Psi, thanking the Association for the use of one of the boxes at the Alumni Ball.

Moved and seconded that the communication be received and placed on file, carried.

Messrs Charles Oats, '99; George C. Roux, '99, and Edward K. Ross, '99, having qualified their membership in this Association, by the payment of the usual fee, their names were ordered to be placed on the regular membership roll.

Moved, seconded and carried that the Association hold an outing at Donnelly's, College Point, on Wednesday, June 13, 1900, and that the Secretary be instructed to notify Mr. Donnelly to hold said date.

Moved, seconded and carried, that the Association hold a "stag" on Wednesday, March 7, 1900, and accept Dr. Coblentz's offer to deliver an illustrated lecture on Foreign Postal Cards on that date, the same to be in charge of the Committee on Papers and Queries.

Dr. C. H. Bjorkwall's having resigned from the Editorship of the JOURNAL OF PHARMACOLOGY, it was moved, seconded and carried, that the same be accepted, and that Dr. H. B. Ferguson be appointed Editor of the JOURNAL OF PHARMACOLOGY in the place of Dr. C. H. Bjorkwall, resigned.

The following bills having been found correct by an auditing committee consisting of Messrs. F. Hohethal and H. M. Herold, they were ordered paid: Shwebbke & Knerr, printing 200 postal cards, \$1.25; C. S. Erb, 200 postal cards, \$2.00.

On motion it was ordered that The New Era Printing Co. be notified that Dr. H. B. Ferguson was now Editor, and Charles S. Erb Business Manager of the JOURNAL OF PHARMACOLOGY.

Moved, seconded and carried to adjourn, subject to the call of the chair.

'93 Notes.

The Ball is a thing of the past. So is the little surplus cash we have been hoarding up for months. Some of you kept on hoarding even that night, and wouldn't come and put some of it in circulation. You will find a better and more detailed account of the festivities elsewhere in this number. We will give those of our boys whom we saw, although we fear we missed some of them: W. H. Ihmels, Sarsse, F. M. Stage, Frees, Hoburg, Tanny, and Schaaf.

Walter Huber has not as yet made up his mind which is worse, Brooklyn or Jersey.

Speaking of Brooklyn, since Tanny has left the town, the police force has been reduced and those remaining don't know how to kill time. If he should ever try to come back, the tax payer would combine and bribe him to stay away.

Eugene Webb is swallowing dust and watching out for Indians, at some Western army post.

The Press Committee looked real cute with their badges. The color was so subdued and modest that our illustrious colleague, Mr. Duerr, did not like them at first, but when everyone told him how well the color set off his type of beauty, you couldn't hold him.

The Golden Text for next week will be "get a gait on, and show up."

EUGENE F. LOHR.

'94 Notes.

Schaeffer has recently become proprietor of a new Pharmacy on Nassau Avenue near Kingsland Avenue, Brooklyn, in addition to his Driggs Avenue store. The '94 boys always prosper.

We saw Cook the other day. He is located now on "the Bowery" in Harry Miner's handsome pharmacy next to the theatre.

We hear a rumor of one of our graduates having been seen pacing the deck of "Willie the Big" (name patented by Wm. Nye), outward bound on a recent trip. Who says the drug biz doesn't pay.

Geisler not only rolls pills but is one of the star rollers of the Retail Druggists Bowling Club.

One of our doctors is now laboring on a work on dietetics "a comparative study of Chop Suoy as a tissue builder." In the course of his investigations we understand he left his Happy Home at 1 G. M., and after consuming four portions walked 27 blocks without experiencing any fatigue. A committee of five accompanied him over the course and reported favorably on the new diet.

'98 Notes.

The Alumni Ball is now a thing of the past and to be placed with all the other good times we have had since the Alumni Association began to give balls, receptions, outings, dinners, etc. The only difference between it and other balls was that, being so far ahead of them both in numbers and sociability, it made them look like thirty cents. Our class was represented by about the same number as last year. Brecht, Tscheppe and myself were the only ones who were present both last year and this. We also had the pleasure of the company of Miss Greebe, F. W. Brown, Lant, Cooper, Fraser, Nagel, Barrett, Brookes, Guthrie, Gregorius and, last but not least, we were surprised to see Ackerman's "The dirty ——" pleasing countenance. You should have seen him dancing. It was a fine R for sore eyes.

John J. Maffia is managing the store of Francis S. Werner, 37th street and 7th Ave.

Crippen was discovered the other day at Queencer's Pharmacy, 57th street and 9th Avenue where he has been for some time.

De Biaso is the manager of Paul F. Zebrike's Pharmacy at 106 West Houston, right in the heart of the "cullud population."

Barrett is now clerking for George J. Loeffler, 705 Main Street, Hartford, Conn. He has a very good position and has been there since *last* November but he says it is so hard to get used to living in a small town after being in dear old New York for two years. I wish we had more in our class like him. He took enough interest in the Alumni Association to come down here to attend the ball.

Stayton is now the happy owner of a store at 8th Avenue and 118th street, Manhattan, where he says he is simply *coining* money. (Cheese it, the Cop!)

Russell Marsh has left the college and is now clerking for Dr. Charles H. Gerken, No. 1495 Broadway, Brooklyn. It is rumored that he also intends to get married; at any rate he must be in love, judging from the following anonymous note I received "A question to ask. Is Russell Marsh of a sane mind? Doors in stores are supposed to be locked at night but am afraid his mind is otherwise taken up, so it cannot be helped." It looks rather suspicious doesn't it?

We received a call a few days ago from Ganung, who is now at the pharmacy of J. W. Wheeler, of Litchfield, Conn. From him I received the following information: Bolles is with Pratt & Grannis, and Crutch is with his father; both being at the same place, that is, Litchfield, Conn.

Apothecary Arthur Richards, U. S. N., is now stationed at the Medical Storehouse, Mare Island, California. He is soon to be succeeded by Pharmacist Alrik Hammar formally of the U. S. S. "Olympia," whereupon Richards will be sent to Manila for duty. We expect to have some interesting letters from the far East, for Richards is an able boy with the pen and you may expect something wonderful as to the habits and ways of our pharmaceutical brethren in the new possessions.

T. BRUCE FURNIVAL.

'99 Notes.

I am really glad to hear that Livingstone has been re-elected reporter for the class of 1900 as it will give him a good chance to get rid of some of his kinetic energy. He is a pretty good poet, but don't tell him I said so.

George Henry Clay Lischke has accepted a position with Henry A. Vogt, Lexington Ave. and 116th St.

Bloch has changed his location and is now with F. S. Schaeffer, No. 242 Driggs Ave., Brooklyn.

Otto N. has moved again (I din't mean that for a rhyme but couldn't help it) and is now with B. A. Goldinst, Third Ave. and 88th St.

Harry N. Roberts is still at Pittston, Pa., and is working pretty steady. Probably something in view but I couldn't say just when.

After the ball is over,
After the break of day,
Somewhere a heart is aching,
Miss B— didn't come o'er the bay.

“ But ”

Somebody,

Waited honey, waited honey, waited long for you (I wonder who *somebody* could have been).

The lady portion of our class was represented by Misses Levy and Ehlin. That's right girls, keep the ball a rolling.

Our friend Ernest Boetzel was in full glory and made himself very agreeable distributing orders of dance.

Hermes, Tyler, Zinke and Tsheppe also represented the class (you ought to see Tyler dance). That's right boys, always respond when '99 is called.

Yes.—Louis Michel was there too. Until he met the nicest girl he ever knew, he hasn't been seen since.

W. C. Stubenrauch with his bright and ever smiling countenance was there and did all he could to keep 1900 and 1901 boys upon the straight and narrow path, but some managed to escape and went down to the refreshment factory.

The ball was a grand success from A to Z, and the members of '99 wish to congratulate Chairman Borggreve.

Conlin singed his mustache during a demonstration of the boiling point of ether (what a singe).

Lauer is still at the old stand.

Cunz, the chemist, visited the college recently.

Rolfs and Gardner also paid their respects to the P. G. department.

A scheme has lately been invented by Miss Blau for recovering gold from Staten Island Water. This is a new syndicate so she claims, but beware (others have failed and fled to Europe). Has the Paris Exposition anything to do with it?

Thomas hurt his knee while playing basket ball, so amiable F. Vanton gets his reagents from the stock room for him.

Stubenrauch always had bad luck when testing the percentage of carbonates (every thing went up in smoke). I wonder how he makes out now.

Don't forget that your class reporter has changed his address. It is now Dorranceton, Pa., and he is anxiously waiting to hear from you. A postal card will reach me.

THEODORE E. MEYERS.

1901 Notes.

The foot-ball game, N. Y. C. P. vs. C. C. N. Y., played at Deikel's Riding Academy on the evening of January 12th, was won by C. C. N. Y. The score being 25-5. The victors were too heavy for us and have had more practice than we since the election-day game. One thing was very noticeable, *i. e.*, the difference in crowds. The C. C. N. Y. men turned out in full force, while the N. Y. C. P. men were few and far between. If was a lucky thing for the team that they didn't have to rely upon their classmates or they would have come out at the small end of the horn financially.

The line-up was as follows: For the N. Y. C. C. P. team, A. C. Thompson, 1901, L. E.; Henry Klingler, 1900, L. T.; Chas. Heller, 1900, L. G.; Ed. F. Pfaff, 1900, C.; John McCarthy, 1900, R. G.; Max Kaliski, 1900, R. T.; Philip Hill, 1901, R. E.; John Dwyer, 1900, Q.; M. A. Kaehrl, 1900, L. H.; Fred Frees, 1900, R. H.; George Morse, 1900, F. B.; M. A. Kaehrl, 1900, Captain; Theo. F. Endress, 1900, Manager; Mr. J. Cavanaugh, Official; Mr. Reagan, Linesman; Mr. Grassi, Timekeeper.

By-the-way, boys, don't forget the advertisers in the program of the game. If you have forgotten who they were perhaps it would be well to recall them to your memory.

At the meeting of the class held January 20th, the one subject that has been racking the brains of so many, was settled, *i. e.*, the class has decided to adopt the shield pin which has been adopted by so many classes lately. There was comparatively very little opposition, as all who saw the pin could not help being satisfied.

The members of the class who attended the 49th annual ball of the "New Yorker Deutscher Apotheker Verein" at Terrace Garden, January 27th, have decided that the Germans know how to give a good ball and a good time.

Three cheers for Vice-President Hill! He has a brand new hair cut, which is, by-the-way, a much needed improvement.

The class of 1901 has some of the best guessers that ever attended college.

When the bark has been removed from the tree, what is left? Mr. Miller had a faint suspicion that "Sapho" might be found there. Very poor guess.

Mr. Cole's friends seemed to have taken a sudden dislike to him in a recent physiology lecture. Why?

What class of medicines cause vomiting? Ans. Expectorants. Another bad guess!

Mr. Ditmar came into quiz the other day looking like an Indian. The reason for his not giving us a war-dance was that the Prof. was there, and Mr. D. guessed that the Prof. wouldn't enjoy it. That was a *good* guess!!

Since Mr. Hart's initiation in the Phi Chi it has been impossible for him to stand up straight when called upon in quizzes.

Dr. X. claims to have a brother-in-law in the milk business who takes his hat off to a cow.

"In how many states does water exist?" "In all the states in the union except New York and Kentucky." His father is a brewer on the east side, and his uncle a moonshiner in Ky.

"Keep off the grass and buy your goods of S—C—Co.," was the sign placed upon the lecture table not long ago. The men who were putting them up in the street were arrested, while those putting them up in the lecture room were given just two minutes to take them down. That was easy.

One of those "wise seniors," while being quizzed by a fellow student shortly before the last board exams., was asked what a molecule was. "Half an atom," was the answer. He is one who expects to graduate with the class of 1900. Will he do it?

Mr. Beebe had the chance of his life the other day when a lady asked him to triturate some tannic acid and potassium chlorate. Now, it is a well-known fact that

Mr. Beebe is a friend of the ladies, but he believes that there is a limit to everything, even friendship.

"A triturate is a powder in a finely subdivided state of subdivision." Jordan Amendment to U. S. P.

Father Time is active; the faces of many of the boys are telling it. Mustaches are now quite apparent; they are more numerous than clean shaven faces which predominated in last October.

Will some reader of the JOURNAL kindly let us know where the formula for the following can be found, "Pulvis Jelliffe Compositus."

For that tired feeling take Hood's Sarsaparilla or some of your own make. N. C. White has taken this advice. The Board of Trustees find it impossible to place a cot in the Quiz Room for his disposal. "A word to the wise is sufficient."

Sect. 2 may have a dwarf but Sect. 3 has a freak. Sieve tubes in the shape of a perforated stomach is the property of a 1st "Ward" man.

A. C. THOMPSON.

Kay's Kurious Kolumn.

Brooklyn had a great ball last month, both the Alumni and Phi Chi sending delegations. I asked one of them how the affair was, and he told me that it reminded him of the last Alumni ball, it was so different.

I must give those Brooklyn boys credit for hustling. Some of them are nearly as good as our only Fred Borggreve. They had a nice dinner a short time ago.

Alumni Day will soon be here again. I understand that Ed. Meinecke is again chairman of that day's committee, and I think our president again showed tact in his appointment. Ed. is always open for suggestions. So write him, if you know of anything interesting for the programme.

Did you notice "The Deacon's" foreign phrase in the January number? It takes a "Schmalz Gesicht" to "sling ink" that way.

Time was when the Alumni charged 25 cents a head at its receptions; but the prosperity of the past year has obliterated the custom, for which "The Tanks" are thankful.

The yellow Journals are not in it with the JOURNAL OF PHARMACOLOGY signs in the College hall, where flaming head lines and pert notices are booming business.

I believe the boys want only one outing this year, and that in June: too bad the one last September was not as successful as we anticipated, for it would have established a precedent. Still I guess, after all, one good old outing is about all the "workers" care to worry about.

They tell me that Richmond Beach, on Staten Island, is a good place for outings. If we should select a place like this, I fancy an excursion steamer would be our best means of transportation. Consequently, we would have to charge for tickets.

A trip like this always seems to bring the crowd closer together, especially if the moon be obscured when returning.

The last outing we had on our own boat was all right. I remember a classmate of mine seemed to be unusually interested in his lady friend that day; in fact, he was never alone. A month later I learned that he had married her that day and that they were celebrating their honeymoon.

ALUMNI DAY NUMBER.

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APRIL, 1900

No. 4

The Journal of Pharmacology

EDITED BY THE ALUMNI ASSOCIATION OF THE
COLLEGE OF PHARMACY OF THE CITY OF NEW YORK

CONTENTS

Urine Analysis by the Pharmacist	67
GEORGE C. DIEKMANN, Ph.G., M.D.	
Abstracts	69, 76
The So-Called Danger from the Use of Boric Acid in Preserved Foods	70
DR. OSCAR LIEBREICH.	
Organic Hair and Fur Dyes	77
Our New Business Manager	78
Alumni Day Program	
Part I.	83
Part II.	87
To the Graduates of 1900	91
CHARLES S. ERB, Ph.G., <i>President Alumni Association.</i>	
Alumni, College and Class Notes	92-100



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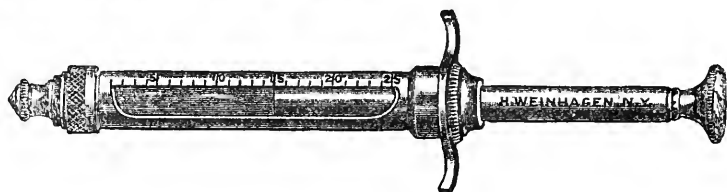
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Devoted to the Advances Made in *Materia Medica* in its Branches.
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VOL. VII.

APRIL, 1900.

No. 4.

Urine Analysis by the Pharmacist.

BY GEORGE C. DIEKMAN, PH.G., M.D.

(Continued from February Number.)

PART TWELVE.

SULPHURIC ACID.—Continued.

1. QUANTITATIVE ESTIMATION OF SULPHURIC ACID (GRAVIMETRIC).

In the estimation of sulphates, both forms which occur in urine must be considered. The separation and estimation of the two forms of sulphates may be readily accomplished by the method of Baumann. The simple or praeformed sulphates are precipitated upon the addition of barium chloride solution, after first acidifying with acetic acid, a minimum quantity of acid being employed, ethereal or conjugate sulphates remain in solution. The latter are precipitated after boiling with mineral acids, and adding barium chloride.

A. Simple or praeformed sulphates.

50–100 cubic centimeters of filtered urine are diluted with an equal volume of water, and acidified with acetic acid. An excess of barium chloride solution is added, and the whole warmed on a water bath until the precipitate which has formed, becomes granular. From one-half to one hour will be required. Set aside for a few hours and then filter, through an ashless filter reserving the filtrate. Wash the precipitate until free from chlorides, using hot water. Dry, and transfer to a tared platinum crucible and ignite. It happens at times that the precipitate of barium sulphates carries down

with it some organic substances. These may act as reducing agents during the ignition, and a part of the barium sulphate may thus become reduced. The residue in the crucible should therefore be moistened with a very small quantity of diluted sulphuric acid and carefully heated over a low flame until vapors of sulphur trioxide cease to be given off. Then ignite again, and after cooling in a desiccator, weigh. From the weight so obtained, deduct the weight of the crucible and that of the filter ash, if an ashless filter was not employed. The difference in weight represents barium sulphate, and each 100 parts of this are equivalent to 34.331 parts of sulphur trioxide (SO_3). The average quantity of sulphuric acid found in urine in the form of simple sulphates equals 0.2-0.25% SO_3 .

B. Conjugate or ethereal sulphates.

The filtrate from the foregoing operation is employed for the purpose of estimating the quantity of sulphuric acid, occurring in the form of conjugate or ethereal sulphates. It is strongly acidified with hydrochloric acid, heated to boiling, and allowed to boil for some time, and then treated with barium chloride, as in the previous operation. The precipitate is treated in the same manner as before. The total sulphates, that is both simple and conjugate, are then obtained by adding together the results of both estimations. The relation of simple to conjugate sulphates can readily be ascertained by comparing the results obtained from each operation. Total sulphuric acid may also be estimated in a single operation. The urine is acidified with hydrochloric acid, and heated to boiling, and solution of barium chloride added. The precipitate of barium sulphate which results is further treated, as described before.

2. Estimation of total sulphuric acid volumetrically.

To a measured quantity of urine, which has been strongly acidified with hydrochloric acid, and boiled, barium chloride solution of known strength is added, in quantities sufficient to cause a complete precipitation of all sulphuric acid, in the form of barium sulphate.

REAGENT REQUIRED.

A. 30.5 grammes of chemically pure barium chloride ($\text{BaCl}_2 + 2\text{H}_2\text{O}$) are dissolved in enough distilled water to make one liter. Each cubic centimeter is the equivalent of 10 milligrammes of sulphur trioxide (1 cc. = 0.01 SO_3).

The method is executed as follows: 50-100 cubic centimeters of urine are placed in a beaker, 5-10 cubic centimeters of hydrochloric acid added, and the mixture boiled for one half hour (= decomposition of conjugate sulphates). Then add, from a burette, the barium chloride solution 1 cc. at a time, until no further precipitation occurs. The mixture must be boiled after each addition of reagent. Allow the precipitate to subside and withdraw a small quantity of clear liquid (about 1 cc.), and add to this a

few drops of reagent, and note whether a precipitate continues to form. If so, transfer the liquid just withdrawn, back to the beaker, and continue adding barium chloride solution, 1 cubic centimeter at a time, until no further precipitation occurs, upon adding a few drops of the reagent to a small quantity of the clear liquid. Note the exact number of cubic centimeters of reagent required.

Example : When 10 cubic centimeters of reagent were added, all the sulphates were not precipitated, when 11 cubic centimeters were added, no further precipitation was noted when a small quantity of liquid is withdrawn, indicating that perhaps the barium chloride solution was now in slight excess. In this case repeat the operation, employing the same quantity of urine as at first. After treating with hydrochloric acid and boiling, add first 10 cubic centimeters of the reagent, and after this .2 cubic centimeter at a time, until complete precipitation is accomplished, without using an excess of reagent. From the number of cubic centimeters of reagent employed, the quantity of sulphuric acid expressed as SO_3 , can readily be calculated.

3. Estimation of neutral sulphur :

The sample of urine is treated with sodium carbonate and sodium nitrate, and evaporated to dryness. The dry residue is ashed, and the ash extracted with water. This treatment converts the neutral sulphur into sodium sulphate, which is extracted by the water. The solution thus obtained is acidified with hydrochloric acid, and precipitated with barium chloride, and then treated further as above. In another portion of the same sample of urine, an estimation of total sulphuric acid is made. This result is subtracted from the first result, the difference representing the sulphuric acid which was formed by the oxidation of neutral sulphur.

(To be continued.)

Abstracts.

Cocaine Poisoning.—Dr. Bergmann, *Wien. klin. Wochenschrift*, March 8, 1900, reports a case of cocaine poisoning following the injection of 5 cgm., given to relieve severe pain. The results were satisfactory. The day following 3 cgm. were injected with collapse, rapid heart action and rapid circulation, all within three minutes. In ten minutes there were clonic contractions, dilated pupils and exophthalmos. The patient recovered and the pain disappeared.

Thrush Fungus in Gastritis.—W. A. Bastedo, *Medical News*, March 24, 1900, reports a case under observation at St. Luke's Hospital of severe gastritis produced by the thrush fungus. The case occurred in a woman of twenty-six years and was cured by lavage. The article is accompanied by an excellent illustration.

The So-called Danger from the Use of Boric Acid in Preserved Foods.*

BY DR. OSCAR LIEBREICH

(Continued from March number.)

The conclusion of *The Lancet* itself was as follows: "As will be seen from these communications there is considerable diversity of opinion as to whether antiseptics in the quantities used for preserving food are injurious to health, and also whether legislation could satisfactorily deal with the subject, although on the whole the conclusion appears to be not altogether unfavorable to the use of preservatives with certain restrictions. The majority agree in one thing, and that is that should the practice be tolerated it should be placed under some control, so that, for instance, where the addition of antiseptics is practised it should be mentioned to the purchaser. Very few of our correspondents, it is important to note, are able to quote cases within their experience of injury to health having been caused by preservatives in food."

One can be certain that if medical men of the standing of Dr. Lauder, Brunton and others had been able to satisfy themselves that the small quantities of antiseptics necessary possessed even a trace of injurious influence, they would at once have concluded it was altogether better to entirely forbid the preservation of food. From the researches of this commission it can also be inferred that the authorities referred to held that it was better to preserve food with these small and non-injurious quantities of antiseptics than that any section of the public should be obliged to eat decomposing food, regarding the injurious nature of which no doubt exists. Dr. Annett quotes Binswanger also incorrectly. More extensive quotation would have clearly shown that as the result of his investigations Binswanger held that small doses of boric acid exercised not only no injurious action but so little action whatever that it was practically inert. These misquotations have already been corrected in my pamphlet, but it seems to me necessary to refer to one more important point.

Dr. Annett himself draws attention to the fact that the only direct instance of the injurious action on man of boric acid when added to milk is that recorded by Dr. A. R. Robinson† and referred to by Dr. Annett in the following words: "Five of the seven inmates of a certain house became suddenly ill after partaking of blanc-mange which had been made from milk of the previous day, to which, as was confessed, the dairyman supplying it had already added boric acid and to which the cook had added a further quantity to preserve it over night. Nine fowls fed liberally with the blanc-mange became ill, five dying." From such a descrip-

* *Lancet*, London.

† Public Health, August, 1899.

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tion it is not possible to form any idea as to what the nature of the illness of the inmates was. One may pass over the question as to what symptoms were exhibited by the hens, and what were the appearances that would have been present in the post-mortem examination (which was not made), and I put to Dr. Robinson the question, if he has not observed, after blanc-mange, after ice, and particularly after milk, similar sudden illness without any boric acid having been present. It is not uncommon for illness to ensue if food has been kept in vessels in contact with metal, as in the case of blanc-mange, often occurs. But the first question for a sanitary officer to settle was the mode of preparation of the blanc-mange. In the cookery books of different nations the ingredients are stated as follows: Milk or cream, bitter almonds, sugar, gelatin, vanilla, lemon peel and bay laurel leaves. From this it is evident that it is not impossible that things may have been present which are known to afford opportunities for poisoning to occur. Vanilla is often such a cause, and the possibility for poisoning even by prussic acid exists through an excess of bitter almonds being used. The bitter taste of these is by no means a protection to the people partaking of the food, for the laurel leaves and lemon cannot only conceal this, but the combination with bitterness may also add an extra flavor. Also, the milk may have already been poisonous before the addition of the boric acid, and it is well that boric acid only prevents the further formation of toxic bodies without destroying those already existing. Of not one of these possible contingencies has Dr. Annett taken any account and it is now impossible to determine whether any of these same factors were present. One can, however, through investigations on hens, prove Dr. Robinson's assertion that the boric acid contained in the blanc-mange was the cause of the illness of the people and of the hens, is without foundation. It should have been Dr. Robinson's work to investigate this and show whether hens can be poisoned or not by feeding them on blanc-mange to which boric acid has been added before he alarmed the world by making public so startling an assertion. For this purpose it was only necessary to clear up the whole question by so simple an experiment as the following.

I placed nine fowls for several days on ordinary corn-feeding, and observing that one showed some signs of respiratory trouble it was discarded and the following investigation was carried out on the remaining eight. On the first day one liter of milk and six grammes and five decigrammes of boric acid and 200 grammes of maize-flour were made into a thick porridge, which was equivalent to one ounce and $16\frac{1}{2}$ grains in one gallon. This corresponded to a blanc-mange, and on it the hens were fed. On the second day they received the same feeding, and on the third day half of the same feeding. In three days the hens had each received about two grammes, or 30.68 grains, without any disturbance in health being notice-

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able. Their eagerness to eat corn was in no way diminished. On the twelfth day seven of the hens at 1 P. M. received 10 pills, each containing 0.05 gramme of boric acid—*i. e.*, each received 0.5 gramme, or 7.72 grains. At 3 P. M. the same dose was repeated, so that every animal had received one gramme, or 15.43 grains. The eighth hen received 50 grammes of sweet almonds. On the thirteenth day no appearance of illness had manifested itself, and on the sixteenth day the fowls appeared perfectly well.

From this it is fully proved : (1) that if blanc-mange be prepared with milk and boric acid added even in such excessively large quantity as 6.5 grammes in a liter (or one ounce and $18\frac{1}{2}$ grains in a gallon) it is not poisonous, and further that boric acid itself in such large doses as one to two grammes (or 15.43 to 30.86 grains) exercises no toxic effect on hens ; (2) that the toxic appearances observed by Dr. Robinson in the hens did not arise from boric acid ; and (3) that Dr. Robinson has not succeeded in ascertaining the true cause of the sickness which affected the hens and the inmates of the house. It is not necessary to state that my experiment on the hens has no other value than to prove Dr. Robinson's error.

Another point in Dr. Annett's article concerning the feeding of kittens requires to be gone into. Such experiments are extremely surviceable to the inquiry, but in the present instance the experiments performed do not fulfill their intended purpose, *viz.*, to prove the toxic effect of *small* doses of boric acid when given for a long time. All that these experiments prove is already known, *viz.*, that animals finally succumb under the repetition of large doses. I regret the necessity for adversely criticising these experiments, nevertheless, it is not stated how much the kitten ate, and the experiments show that conclusions based on only two series of experiments are founded on insufficient data, since two of the kittens fed on milk containing 40 grains died earlier than any of those fed on milk which contained 80 grains. It is necessary in order to form a reliable judgment concerning the feeding of kittens to have a long series of experiments. As I have stated, the difficulty is here present that the data given are imperfect. They permit, however, of a conclusion being drawn. One comes to the following results. If we take a solution of 40 grains in the gallon, corresponding to the second series of experiments, then there are 2.592 grammes in 4.545 liters (*i. e.*, in one gallon) or 0.57 gramme in one liter. However, in the data given by the experimenter it is not stated how much of the milk the kittens consumed. It may have been a small quantity, say 100 cubic centimeters, which each kitten drank. In this case the animal ingested 0.057 gramme or 0.88 of a grain of boric acid. The mean weight of the kittens in the series was 408.4 grammes.

It must now be settled to what age in a child these three-weeks old to four-weeks old kittens are comparable. If we accept that a man grows till he is 20 years of age and that a cat grows till it is two years old, then the

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kittens experimented on may be compared to children of from nine to ten months old. A child of this age has a weight of, it may be, eight kilogrammes and 300 grammes, and corresponding to the weight of the kittens such a child would require to receive 1.13 grammes or 17.44 grains of boric acid. To obtain this it would be necessary for a child to use one liter and 983 cubic centimeters of the milk consumed by the kittens (0.57 gramme of boric acid in one liter). But such a child at the very utmost could only partake of one and a half liters per day, which would contain 0.86 gramme, or 13.25 grains, of boric acid. To make a general comparison with the experiments with the kittens, since the child has a weight of eight kilogrammes and 300 grammes and the kittens of 408.4 grammes, the kitten ought to have received no more than 0.042 gramme of boric acid, and this quantity must be contained in 100 cubic centimeters. This would correspond with milk containing only 0.42 gramme per liter or 29.45 grains per gallon, while as much as 40 grains per gallon was used in these kittens. This difference of more than 25 per cent. of the stated quantity of boric acid is very important, particularly when the treatment is continued over a long period. According to this calculation, made in a very favorable light from the experimenter's standpoint, it is evident that Dr. Annett is very far removed from having proved by his experiments that small quantities, if used for a long time, are poisonous for men and children.

Abstracts.

American Folk Medicine.—In a recent communication, R. H. True (*Pharm. Review*, Feb., 1900) cites a few interesting notes on folk-lore medicine of the United States. Some of these empiricisms are as follows: "Swallowing a live head louse without the knowledge of the patient will cure the jaundice." "Biting into a live black snake will insure sound teeth for the one who bites it," is a generally spread superstition. "A sty may be cured by rubbing it with a black cat's tail," comes from Alabama. A unique prescription is current in Rhode Island, thus: "If you have asthma, save all of the nail-parings of your hands and feet for a year. At the end of that time find an ash-tree of the same age as yourself, bore a hole in it, put in the parings and plug up the hole." The following cures for toothache are given: "To bite into a living black snake will cure the toothache," and "Picking the teeth with a splinter from a tree struck by lightning will prevent toothache." The old German folk-lore belief that "thoroughwort" will act as an emetic or as a cathartic, according to whether the plant is brewed with the "blows up or the blows down," is closely matched by the Ohio tradition that tea made from elder bark removed by scraping upward will act as an emetic, whereas, if the bark be scraped downward the tea will have cathartic properties.—*Medical News*.

Organic Hair and Fur Dyes.

Erdmann in a lecture before the Association of Industrial Chemists meeting at Frankfurt a\M., calls attention to some of the more important organic dyes, which have been introduced of late years. Such of these that are non-toxic, present decided advantages over the more or less injurious silver and lead preparations still in vogue. First among these organic synthetic dyes are para-amido-phenol ($C_6H_4 \begin{smallmatrix} \text{OH} \\ \text{NH}_2 \end{smallmatrix}$ 1.4.) and para-phenylene-diamine ($C_6H_4(NH_2)_2$ 1.4.). Their value depends upon the readiness with which they darken through oxidation. If the hair or fur is moistened with a solution of either of these bases, and this followed with an application of a weak hydrogen peroxid solution, a permanent dark stain is produced either immediately, or on exposure to the air. White Angora fur, after moistening with a 3-per-cent. solution of p. phenylene diamine, then a 3-per-cent. hydrogen dioxid, will after 15 minutes take on a deep black and, after a few hours, the color will have become so fast that boiling in a soap solution fails to produce any effect. A cross section of such a stained hair will show under the microscope that the dyestuff has penetrated uniformly from the surface to the center. Similar in deportment to the above is paramido-phenol which appears commercially as a hydrochlorid in white crystals. When used its solution is mixed with an equivalent amount of alkali. The darkest shades are produced by the diamine, while the oxidation colors of the amido-phenol are brown to red-brown.

Dr. Erdmann states that quinone is formed during oxidation and that this unites with undecomposed portions of the bases and gives rise to dark-brown to black insoluble colors. Among this class of dyes are such photographic developers as metol (methyl-p.-amido-m.-cresol) and amidol (p.-diamido-phenol). If to an aqueous solution of the latter some sodium hydrate is added, a deep blue is produced, where a drop of ferric chlorid gives a blood-red coloration. On furs metol and amidol produce brownish-red tints. Quite a number of substitution products of these bases give oxidation colors, thus para-toluylene-diamin ($C_6H_3 \begin{smallmatrix} \text{CH}_3 \\ \text{NH}_2 \end{smallmatrix}$ 1.2.4.) deports like phenylene-diamin, p.-amido-dimethyl-anilin ($NH_2 \cdot C_6H_4 \cdot N(CH_3)_2$) stains brown with a shade into violet. Amido-p.-oxy-benzoic acid ($C_6H_3 \cdot NH_2 \cdot OH \cdot COOH$) stains hair a bright yellowish red while p.-amido-salicylic acid (an isomer) stains light red brown.

For dyeing human hair all these bases are not to be recommended. The use of para-phenylene-diamin is warned against because of its very irritant nature in producing inflammation of the scalp and eczema. The same may be said of di-amido-phenol (amidol). On the contrary para-amido-phenol, which is the parent substance of a number of synthetic antipyretics, is entirely harmless. Metol likewise belongs to this class.

V. COBLENTZ.

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Charles S. Erb was born in the city of New York, November 26, 1867; he is, therefore, a young man for the many honors and offices he has held. He attended the public schools of this city, and entered the retail drug business at the age of fifteen. During the years 1885 and 1886 he attended the College of Pharmacy of the City of New York and graduated in the year 1886. His practical experience was gained in many places: Yonkers, Newark, Jersey City and New York; and in September of 1891 he opened his present retail store at 121 Amsterdam avenue. Here he has established an excellent business and has gained the confidence of the physicians and the public for his courtesy and reliability, as well as scientific business methods.

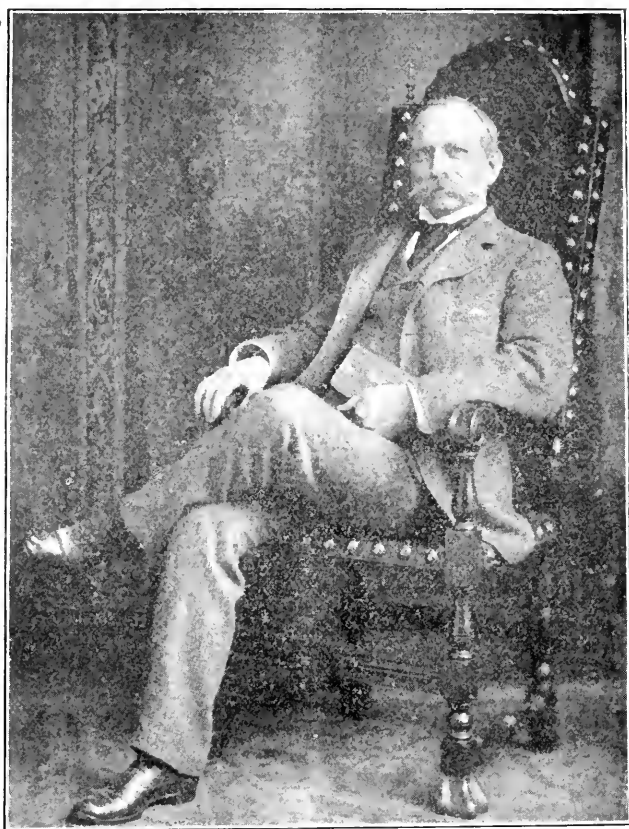
In 1896 he was elected a Trustee of the College of Pharmacy of the City of New York and was re-elected in 1897, and later, in 1899, was appointed as Chairman of the Board of Curators of the College. He has always been active in the affairs of the Alumni Association, being elected to the trust of Treasurer of the Association in 1897 and 1898. In 1899 he was elected President of the Association and has recently assumed the business management of the JOURNAL. Other pharmaceutical interests bind him to the American Pharmaceutical Association, the New York State Pharmaceutical Association, the German Apothecaries' Association, and the Manhattan Pharmaceutical Association.

Pharmacy, however, is not the only interest of our friend. For years he has been active in Masonic circles. He owes allegiance to the Odd Fellows, Royal Arcanum, Grand Fraternity, and is Secretary of the Liberty Lodge of A. O. U. W.

In the active world of business his interests are also varied, being Vice-President of the New York Casualty Insurance Company. He is also a Member of the American Museum of Art, and his leisure moments are occupied in the study of philately, his magnificent collection of stamps now being valued at over \$5,000. This he is abundantly able to protect as he has a true wrist and a straight eye, as his fellow members of the Retail Druggists' Bowling Club can testify.

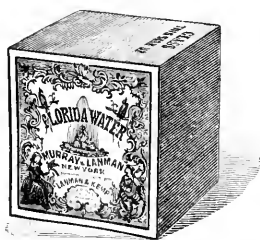
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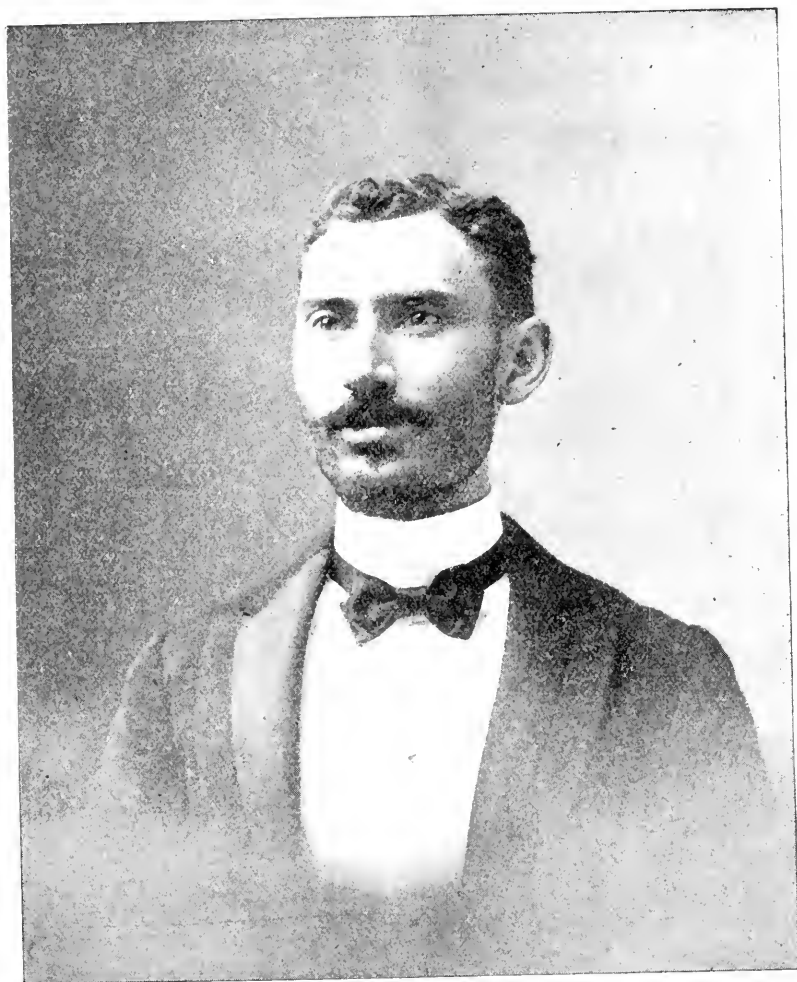
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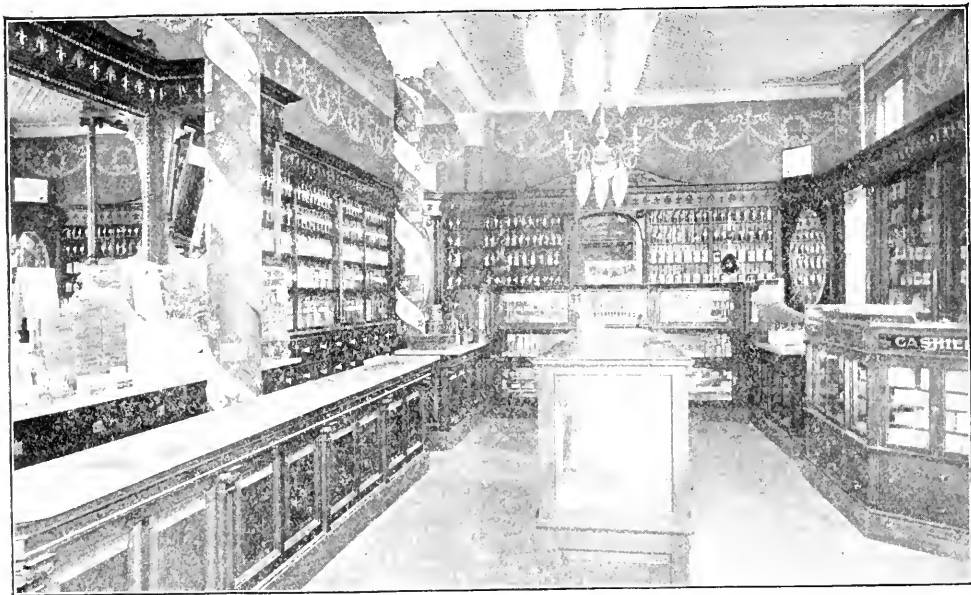


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PART II.

1. RECITATION Selected
MR. HERBERT DE LAPPE.
2. COON SONG New
MR. J. A. UNGER.
3. READING OF THE JUNIOR ROLL OF HONOR.
BY GEO. C. DIEKMAN, Ph.G., M. D., Chairman Alumni Junior Prize Committee.
4. HUMOROUS Original
SMITH O'BRIEN.
5. PRESENTATION OF ALUMNI PRIZES.
By CHARLES S. ERB, President Alumni Association.

1st Prize—Springer Torsion Balance.
2d Prize—U. S. Dispensatory (sheep).
3d Prize—U. S. Pharmacopœia (sheep).
6. VIOLIN SOLO Selected
MR. H. CLAUSEN.
7. WHISTLING Popular
MISS GLAYDES ROBINSON.
8. SPECIAL By request.
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The Journal of Pharmacology.

A MONTHLY JOURNAL DEVOTED TO THE ADVANCES MADE IN THE VARIOUS DEPARTMENTS OF
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Address HARRY B. FERGUSON, PHAR.D., 115 West 68th Street, New York City.

EDITED BY HARRY B. FERGUSON, PHAR.D.,

WITH THE COLLABORATION OF

CHAS RICE, PH.D. H. H. RUSBY, M.D. V. COBLENTZ, PH.D. GEO A. FERGUSON, PH.B.
GEO. C. DIEKMAN, M.D. JOHN OEHLER, PH.G. SMITH ELY JELLIFFE, M.D., PH.D.

To the Graduates of 1900.

All hail to the graduate of 1900!

I greet you in the name of the Alumni Association and grasp your hand as a fellow graduate.

Be constant and true to your chosen profession, be upright in your dealings, honest in your endeavors and steadfast in the performance of your duty.

Be a brother among us and stand with us in promoting the welfare of Pharmacists and upholding the dignity of our craft.

Ever remember your Alma Mater and lend your aid in the support of the institution which imparted to you the knowledge necessary to gain a livelihood.

Do not forget to impress the fact upon the young man whom you may know, that the College of Pharmacy of the City of New York is *the* College which he should attend, to procure a Pharmaceutical Education.

You have no doubt encountered many trials and tribulations during the past two years; you have made sacrifices on many occasions but these were all for the best and now when you can look back with pleasure over the two years spent together with those who are now your fellow graduates, you will recall many instances of kindness shown you by the Trustees, the Professors and the Instructors.

As you leave us to repair to your respective spheres of action, may you ever bear in sweetest remembrance your sojourn with us and your stay at the College of Pharmacy of the City of New York.

Yours fraternally,

CHARLES S. ERB,

President Alumni Association.

Alumni, College and Class Notes.

CONTRIBUTORS.

Alumni Association,	WM. A. HOBURG, Jr., Ph.G., 115 West 68th St., N. Y.
Alumni Notes, Socials, etc., and Classes prior to 1893, . . .	CHAS. S. ERB, 121 Amsterdam Ave., N. Y.
Bibliography,	ADOLPH HENNING, Ph.G., 68 William St., N. Y.
Class '93,	EUGENE F. LOHR, Ph.G., 508 Marcy Ave., Brooklyn, N. Y.
Class '94,	FRANK N. POND, 226 Ninth Ave., N. Y.
Class '95,	GEO. J. DURR, Ph.G., Randalls Island, N. Y.
Class '96,	CHAS. C. H. GERKEN, Phar.D., 169 S. 4th St., Brooklyn, N. Y.
Class '97,	E. A. MEINECKE, Ph.G., 14 Platt St., N. Y.
Class '98,	T. B. FURNIVAL, Ph.G., 115 West 68th St., N. Y.
Class '99,	THEODORE E. MEYERS, Dorranceton, Pa.
Class 1900,	ROBERT B. LIVINGSTON, 115 West 68th St., N. Y.
Class 1901,	ABERT C. THOMPSON, 115 West 68th St., N. Y.
Post Grad. 1900	FANNY A. BLAN, Ph.G., 115 West 68th St., N. Y.
Legal Notes,	H. A. HEROLD, Ph G., 108 Fulton St., N. Y.

Minutes Alumni Association, C. P. C. N. Y., Wednesday, March 14, 1900.

There were present, Messrs. Searles, '86; Ferguson, '95; Borggreve, '92; Diekman, '88; Wolk, '98; Furnival, '98; Herold, '94; Gies, '95, and E. A. Meinecke, '97.

Ex-President Searles in the chair.

Minutes of previous meeting read and approved.

Treasurer's report read, moved, seconded and carried that the same be approved, accepted and placed on file.

Entertainment Committee reported progress.

Dr. H. B. Ferguson submitted a report for Committee on Papers and Queries.

Moved and seconded that report be accepted. Carried.

F. Borggreve, for Ball Committee, submitted a final report.

Moved, seconded and carried that report be accepted with thanks, and that committee be discharged.

President reported that the second Wednesday in June has been reserved at Donnelly's, College Point, for Alumni Outing.

Moved, seconded and carried that president's action in having grounds reserved be approved.

Mr. A. Henning was appointed a committee of one on the purchasing and procuring of the Junior and Senior Prizes.

It was moved, seconded and carried the Junior Prizes be as follows:

First prize, Torsion Balance.

Second prize, U. S. Dispensatory (Sheep Bound).

Third prize, U. S. Pharmacopœia (Sheep Bound).

Moved, seconded and carried, the Alumni Day Committee be allowed fifty-five dollars, for Alumni Day expenses.

Moved, seconded and carried that the piano in the Alumni Room be tuned and regulated at a cost not exceeding \$2.50, R. Gies appointed as a committee of one to have the same attended to.

Moved that a committee of one be appointed with power to add to its number, to attend to the arrangements for the Sixth Annual Ball in 1901.

F. Borggreve appointed to look after same.

Moved, seconded and carried to adjourn, subject to call of chair.

W. A. HOBURG, JR.,
Secretary.

'93 Notes.

"In the Spring a young man's fancy lightly turns to thoughts of bock beer." We don't mention names, but we know of one whose thoughts must have been turned on full speed, one evening last week.

Henry Sasse contemplates a trip to Europe this summer. Only the rich can afford such pleasures. Ambos will manage his store during his absence. "An ocean trip brings out all there is in a man."

"Some men are easily rattled but hard to shake," so said our wise man about 3 A. M.

"Photographic," formerly "Happy Harry Heller" is still on the books. His guileless smile may be seen accompanied by a bike and a camera most any afternoon on Eighth Ave.

If our athletic friend "Mac" were only a '93 boy what an artistic "roast" we could hand out to him.

"Tauny," the learned, will soon be turned loose on the unsuspecting public. He will, no doubt, swing his shingle to the breezes in the upper West Side of the city.

Munsion, we hear, is in town, but where, oh, where, is he?

Commencement is now drawing nigh. We will be on hand to count noses and hope there will be an assorted stock of '93 noses to count.

EUGENE F. LOHR.

'97 Notes.

Alex. Young, M.D., is now house physician at one of the city hospitals on Randall's Island. Brown is also located as an Apothecary.

"Foxy" de Martini has engaged in business on his own hook at the corner of Hancock and Bowers streets, Jersey City, N. J.

It is said that our old friend Walling is at Keyport, N. J.

Ronsheim is said to be engaged.

Always ready, Grube.

Operator at Pack Bros. to Berliner.—"Look pleasant, young man, this is a very expensive apparatus."

Berliner.—"Wait a minute."

'98 Notes.

Many of you will no doubt be surprised to hear that Morgan (Jimmy J.) has left his old stand with Caswell, Massey & Co., and is now with Haas, Twenty-first street and Fourth Avenue. I wonder how he came to do it.

Mordaunt is now clerking at Priest's pharmacy, Seventh Avenue and Twenty-third street. He ought not to be very lonesome there, so close to the Tenderloin and also to Upper Darktown.

Loree (Dr., if you please) is rolling pills and waiting on soubrettes at Chumar's pharmacy, Eighth Avenue and Twenty-third street. We understand he spends all his spare time loafing around the stage entrance to the Grand Opera House. Now, old man, take our advice and "forget it" (that is, the stage door) and put in your time studying some of the great questions of the day.

There are still quite a number of our class who have not as yet become members of the Alumni Association. It is time we all belonged to it, and I would urge all graduates to join, as there is no better way of helping along the progress of Pharmacy than by affiliating yourself with a progressive Pharmaceutical Association. While we are

still on this subject, I would also like to impress upon you the need of your becoming a member of the New York State Pharmaceutical Association, as we will need all the members possible on our side at the next meeting in June, at Newburg to help pass any resolutions that may come up in the elevation of our profession.

I hope our class will turn out a goodly number at the Class of 1900's commencement, which is to be held at the usual place, Carnegie Hall, Wednesday, May 2nd. You remember that last year we had the largest representation of any of the classes present, also making the greatest amount of noise. Do not let us lose our reputation.

Any communications will be gratefully received by your class reporter.

Hoping to see as many of you as possible on Alumni Day and at Commencement.

T. BRUCE FURNIVAL.

1900 Notes.

The following resolution was unanimously adopted by the Faculty of our College:

Resolved, That any member of the Senior Class of the year Anno Domini 1900 who fails to pass an examination in each and several of the various courses pursued at the College of Pharmacy of the City of New York, and who does not pay up and turn over to the treasurer of the aforesaid College of Pharmacy of the City of New York the sum of ten plunks (\$10.00) will not be rewarded with a diploma of the aforesaid College of Pharmacy of the City of New York. (This is "Teddy" Endress' idea of a joke. How is it? Pretty gersumiltzer, hey?)

"What are you going to do after graduation?" is the question most prevalent about college. Wouldn't it jar you to hear what some of the Nonentities have in view? Just wait until the "Profs." get through with them. They'll be fit to work on the Underground Rapid Transit with a pick.

The group of swell young men who roam about college with toothpicks projecting from their mouths, sometimes known as the Kappa Psi's, gave themselves up last month and had their pictures taken to be filed at 115 West 68th Street, to adorn the sanctum sanctorum of the Fraternity House. Pach Bros. haven't been able to use the camera, with which the picture was taken, since.

"Frankie" Morse says that should he win the \$100 prize he will sleep in the safe all night. Poor fellow he really needs the money—won't some kind-hearted fellow pass the hat around. Frankie hasn't the slightest chance of looking at the prize and he needs the money, oh, so badly.

Mr. Regan, what is your candid opinion of Long Branch? Our esteemed assistant and instructor, Mr. Hoburg, would really like to know.

Karl Dahlberg is aworking overtime "boning" for the examination. He is bound to finish somewhere near the top of the heap. He and Martin have one thing in common about them. Do you know what it is? Ask me. Whenever you see them, look out for a white horse.

"Eddie" Pfaff expects to "open up" next fall. I suppose he means by that, that he expects to open up his school books and go over the course again (just to get a firmer hold on the subject, as it were). He is a wonder.

Mike Lukin is devoting much time in studying "English;" he has reached that stage in which he can say "what" instead of "wass."

Krehbiel has become the orator of the class, also Poet—Laurete—"Poeta Laudo."

Charlie Lotz still has lots to do, ain't it.

Harry Winnie stands a good chance of taking home a hundred dollars as well as a diploma this spring. Endress, Snouder, Hepburn and Dahlberg are pushing him hard. Schwaubenhausen, the man with the wooden name, is not far behind in the canter either.

Lindermann still says nothing and saws wood.

Hill says that if he does not pass he will get a job down at the Island slinging sandwiches. Look out Wilmer—many a truth is said in a joke. Wouldn't he look nice behind half a dozen "ships that pass in the night." One up.

Frees says that although his name may be cold he is still warm.

Jorgenson joggles on.

Murphy is as solid as a mурphy.

Jackson is in it too.

Foster expects to pass.

Goodale is as good as good ale.

Kaehrle still has plenty of fight in him.

Smoke up Paisley, your pipe is going o'n

Lewis is burning the midnight oil.

"Frankie" Schaefer chases trolley cars in Brooklyn by way of amusement. He is a hot sport.

Dear Clarence Sexton, I 'most forgot you, me boy—You'll pull through or something will burst.

"Andy" Thompson, late of Chester, N. Y., has troubles of his own just at present.

Wilson, get your hair cut, will you? Say, Green, why don't you loan him the price.

Although Zinn's name begins with the last letter of the alphabet you may wager he will not be last on the list at graduation.

Well I have spun enough nonsense for awhile. I'll be able to give you an authentic report next month of the plans of the various members of the class, for the future. So long, "Bobie."

1901 Notes.

Visions of home and mother are now floating before the eyes of the out-of-town students.

Allen is getting fat since his father's ship came in.

It is very noticeable that Bradley is leading Pike astray.

If one's ideas were half as clear during exams as they are after, 100% would be the average mark.

Bull, who left on account of illness, considers himself in luck at present writing.

Do "cells" have walls? If you don't believe it ask Moses or Plummer. Define a cell!

Class of '01 is much worried over a class yell. Better wait and see who has a license to yell. Exams will tell.

The settling of "breakage" for the various Labs. caused "breaks" in many purses. It was the "last straw" for a few.

To the oft-repeated exclamation "I didn't bust half them things," Dr. Gies only replied with a sweet smile and continued to rake in the "stuff."

Let us hope that the number of Banana Starch grains found in Pharmacognosy was not caused by the vender's shouting—Bananas 3 for 10c.

Messrs. Brown, Bradley, Gleason, Walsh and Hardwick constitute the Peerless Billiardists.

A silk hat and Prince Albert are our latest acquisitions. If the wearer had only put on rubber boots he would have been the "whole thing."

The long-dreaded Exams have come and all the juniors turn pale and imagine they are "it" without being tagged.

The girls say:—

"That—," well, I would hardly dare write what one of them said in Lecture recently.

"That it is unnecessary for some of them to pay particular attention, as they remember all they hear."

"That Exams have no terrors for them."

"That one of the section reporters is no gentleman." (That's right, ladies.)

Juniors are requested to drop a line to any of the class reporters as to their location, and any items of interest during the summer vacation will receive prompt attention, thereby keeping up the pleasant acquaintanceship of the past year. Address all communications to Reporter, Class '01, care N. Y. C. P.

K Ψ Notes.

At a meeting held March 25th, new officers were elected for the term of one year.

Meeting of Grand Chapter was held March 31st, Brother Smith, G. A., President. It was a meeting that no member of Kappi Psi could afford to miss. He spoke of the growth of the Society in the past year, and congratulated Gamma Chapter on having the largest membership.

There are about twenty juniors who expect to come up for initiation at the first meeting of the "Frat." next year.

Reward of \$5 is offered to the man who can stick "Pearly" Regan at matching Paisley. Al. Morse and others have tried to do it and they pay for the ice cream soda without a murmur.

"Coney Island" expects to do business at the same old place, in the same old way and at any old time.

"Harlem" has good intentions of going in the drug business for the summer. The result of the exams may have something to do with his plans.

"Al" is refusing all kinds of jobs just for the sake of going to the seashore for the summer.

"Happy Jack" is still playing pinochle and talking.

"Brit" claims that after passing his final exams he will get a jeweled "Frat." pin. Keep a lookout for the pin.

Reynolds expects to spend his summer "Way Down East."

After getting settled for the summer drop a line to your reporter so he may keep the rest posted.

Address all communications to

A. C. THOMPSON,
Reporter of K Ψ.
115 W. 68th St.

Post-Graduate Notes.

Talking "Staphylococci" is positively prohibited in the P.-G. Class.

Lost, strayed or stolen.--A white mouse from the Bacteriological Lab. Finder will receive a vote of thanks upon returning the same.

Our Post-Graduate Class received quite a round of applause as we passed the Seniors assembled for a quiz.

We need not all feel flattered, however, as we learn 'twas all intended for Vanton.

The art of cookery is quite an item in P.-G. course; therefore I advise Seniors who contemplate becoming Phar.D.'s to acquaint themselves with this branch of science prior to entering this course.

A Post-Graduate Inquiry.—Is it easier to plug at test-tubes or at studies?

Our model student.—"Thou shalt not steal" (even rice paper) is practiced to its full extent by Wyckoff.

Microscopes are a botheration at times. Aren't they, Purdy?

Take note of the serious expression Conlin is assuming as the examinations hover in sight.

It has been echoed that Vanton's subject for a thesis is: (a) How to Woo and Win. (b) Is Marriage a Failure? The P.-G. reporter is not responsible for the authenticity of the above circulation.

Is it nobler to bleed for one's country or for the sake of science? Thomas knows best.

As far as the ladies are concerned they are beyond criticism—do much, say little.

Each member of our class was presented with a copy of "A Message to Garcia." The presentation was made by Prof. Jelliffe. We all were benefited by the lesson therein taught, and as a class recommend other students, who have not read the same, to do so.

If Stubenrauch makes as brilliant a success of chemistry as he has made of photography, his fame is assured.

While the P-G's were "cleaning up house," and thoroughly enjoying the work, there was heard a crash of glass, and upon investigation, 'twas found that our class-mate Wettlin, had fallen, accompanied by bacteria galore, petri dishes, test-tubes, etc., and he was in hot H₂O besides. "O what a fall it was."

Conlin's only consolation:—" 'Tis better to have loved and lost, than never to have loved at all."

FANNY A. BLAN.

Kay's Kurious Kolumn.

Nothing curious about Fred. Linnig getting married, but I must grab the news to help fill my column. This was the announcement I received a few days ago:

Mrs. Mary Emeline Beebee
announces the marriage of her grand-daughter
Lucy Anderson Beebee
to
Mr. Frederic Linnig
on Wednesday March the twenty-first
Nineteen hundred
Brooklyn.

Since then I have had the pleasure of congratulating the happy couple, and learned that they had spent their honeymoon in Washington.

I like to harp on Alumni Outings, the topic seems to please our lady readers, and I don't blame them, for these events are "all right."

We are going over to College Point again; nice place and easy to get to, if you miss the boat, you'll find friends. I have been wondering how the boys are going to turn out this year. May we look forward to Pres. Erb with his whiskers, "Uncle Rudy" in his cute Knickerbockers, "Ragtime Harry" with his usual, "The Deacon" with a new hat, "Eddie" Meinecke with a hair cut, and "Serg't" Davies with his express company?

The Diploma Pre-requisite seems to be the topic of "the" day. I hope our boys will follow President Erb's advice in the last JOURNAL. "Remember Albany."

Alumni Day should bring out a large delegation this year. Aside from the elections there are other matters that require attending to.

Here's to the new Business Manager of the JOURNAL, may his resources never become exhausted.

Examination Questions of the Board of Pharmacy of the City of New York, March 19, 1900.

CHEMISTRY.

1. Define the following terms :

A. Matter	C. Isomorphous
B. Amorphous	D. Dissociation
2. Theoretically, how many grains of Hydrogen and Oxygen can be obtained from two kilogrammes of pure water?
3. Give the chemical title of each of the following :

A. HPO_3	C. NCl_3
B. K_3AsO_3	D. SiO_2
4. From what source is yellow or crystalline phosphorus obtained? Name a good solvent for it. What happens when it is exposed to moist air?
5. Give a characteristic test for each of the following :

A. Thiosulphates	C. Sulphides
B. Magnesium	D. Aluminium
6. How would you determine the presence of Phosphorous Acid in Phosphoric Acid? If present how would you remove it?
7. Write the chemical formula for each of the following :

A. Wood Alcohol	C. Caustic Soda
B. Auric Chloride	D. Ferric Nitrate
8. What happens when a solution of Calcium Bicarbonate is heated to boiling? Illustrate by equation.
9. Name the compound which results when Ethyl Alcohol is partially oxidized. When completely oxidized.
10. What are the chief constituents of Crude Carbolic Acid? From what source is it obtained?
11. What compound is formed when a solution of Bichloride of Mercury is added to an excess of Caustic Soda.
12. Show by equation how Nitro benzol ($\text{C}_6\text{H}_5\text{NO}_2$) can be converted into Amido-benzol ($\text{C}_6\text{H}_5\text{NH}_2$). What is the common name of the latter?
13. What is a substitution product? Show by formula what products are formed when Methane is treated with one, two and three molecules of Chlorine.
14. What two classes of compounds does Mercury form? How may they be distinguished chemically? Write the formula for the two iodides.
15. Complete the following equations :

A. $\text{Na}_2\text{CO}_3 + \text{C} =$	C. $2\text{CuCl} + \text{Ag}_2\text{S} =$
B. $\text{NaCl} + \text{NH}_4\text{HCO}_3 =$	D. $\text{Al}_2\text{Cl}_6 + 3\text{Na}_2\text{CO}_3 + 3\text{H}_2\text{O} =$

PHARMACY.

1. Convert each of the following into grains :

A. 0.065 gm.	C. 2.321 gm.
B. 0.002 gm.	D. .933 gm.
2. What is specific gravity? Give the gravity of each of the following :

A. Glycerin.	C. Sulphuric acid.
B. Chloroform.	D. Ether.
3. What is a precipitate? Give the title of two official substances obtained by precipitation.

4. Among the components of a two-ounce mixture are : $\frac{1}{8}$ grain atropine sulphate and $\frac{1}{2}$ drachm of Magendie's solution. What quantity of each will one teaspoonful of the mixture contain?

5. In the manufacture of diluted sulphuric acid, how should the components be added to each other? Why is this of importance?

6. Name an ointment base which is readily miscible with water. State what advantage it possesses on account of this property.

7. Name three volatile oils which are heavier than water, giving the source from which each is derived.

8. Name three official tinctures which are prepared by maceration. Why is this process preferable to percolation in such instances?

9. From what source is Terebentum obtained? Name its chief impurity, and state how it may be detected.

10. What are ointments? State how Unguentum U. S. P. is prepared and how it differs from Ceratum U. S. P.

11. How does a spirit differ from a liquor? Name an official spirit which is a solution of a gas, and state what per cent. of this it contains.

12. How is Basham's mixture prepared? What is its color? Why does the Pharmacopœia direct that it be freshly made when wanted?

13. How would you distinguish between syrup of ferrous iodide and syrup of hydriodic acid? Give tests which you would apply to establish their identity.

14. Name the official chartæ and give an outline of the method for their preparation.

15. Give the official title of each of the following :

A. Hoffman's Anodyne.

C. Borax.

B. Sugar of Lead.

D. James' Powder.

TOXICOLOGY AND POSOLOGY.

N. B.—In giving doses WRITE THE NAME OF THE DRUG and give the MINIMUM and MAXIMUM doses.

1. Define: dose, a poison, an antidote, a corrosive, a narcotic.

2. Name two other evidences of poisoning besides those of SYMPTOMS. Give the symptoms of Belladonna poisoning.

3. Name one of the most deadly poisons, the fatal dose of it and the antidote or other emergency remedy.

4. State the best antidote for poisoning by Oxalic Acid, by Corrosive Sublimate, by Opium, by Silver Nitrate.

5. How would you detect arsenic in vomited matter, and what treatment would you give for arsenic poisoning?

6. Name three good emetics with dose of each.

7. In poisoning, by what substances are fats and oils contra-indicated? Why?

8. Give general directions as to mode and order of procedure in the emergency treatment of poisoning cases.

9. What poisons would you register in the Poison Book? Why? How would you label the poison?

10. What emergency treatment should be employed for poisoning resulting from the inhalation of nitrous fumes, sewer air, illuminating gas?

11. What emergency treatment would you give for poisoning by Creosote? by Phosphorus? What is the proper dose of each?

12. What is the dose of Acetanilid, Chloral, Dover's Powder, Paraldehyde, Strychnine Sulphate?

13. What is the dose of Fowler's Solution, Gnaiacon Carbonate, Phenacetin, Potassium Iodide, Red Mercuric Iodide?

14. What is the dose of the Extract of each of the following: Belladonna, Conium, Ergot, Digitalis, Nux Vomica?

15. What is the dose of the Tincture of each of the following: Cimicifuga, Colchicum Seed, Hyoscyamus, Opium, Physostigma?

MATERIA MEDICA.

1. Give the botanical name and habitat of each of the following: (a) Culver's Root; (b) Bittersweet; (c) Black Haw; (d) Wormwood.

2. Give the official names of three gum resins and three oleoresins.

3. Name four official preparations containing mercury in the metallic form. State the percentage of mercury in each.

4. From what are the following obtained: (a) Creosote; (b) Phosphorus; (c) Iodine; (d) Croton Oil.

5. Name the source of (a) Iodoform; (b) Resorcin; (c) Salophen; (d) Trional.

6. Podophyllum. Give common name, habitat, and part of plant used. Name its active principle and official preparations.

7. Name two examples of each of the following classes, and give their official titles: (a) Seeds; (b) Leaves; (c) Root; (d) Barks; (e) Flowers; (f) Animal.

8. Name three official drugs belonging to the Natural Order Coniferae.

9. What is understood by the term "alteratives"? Describe two or more not of vegetable origin.

10. Oleum Theobromatis. Give common name. State from what and how obtained. What is its principal use in pharmacy?

11. Is Oleum Adipis a fixed or a volatile oil?

12. What is Camphor? Give botanical name of the plant from which it is obtained. In what country does it grow?

13. Jaborandi. Give the official name. Where does it grow? What part of the plant is official? Name the chief medicinal constituent.

14. Give the official name of the plant and the part from which the following are obtained: (a) Saffron; (b) Henbane; (c) Chamomile; (d) Lupuline; (e) Iris.

15. Give the common names of the following: (a) Lappa; (b) Juglans; (c) Fel Bovis; (d) Inula; (e) Triticum; (f) Phytolacca.

Notice.

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COMMENCEMENT NUMBER.

Vol. VII

MAY, 1900

No. 5

The

Journal of Pharmacology

EDITED BY THE ALUMNI ASSOCIATION OF THE
COLLEGE OF PHARMACY OF THE CITY OF NEW YORK

CONTENTS

Urine Analysis by the Pharmacist	101
GEORGE C. DIEKMAN, Ph.G., M.D.	
Abstracts	106, 123
Seventieth Annual Commencement	108-123
Stenographic Report.	
Prayer, 108	Awarding Alumni Prizes, 117
Rev. Francis J. Clay-Moran.	Charles S. Erb, Ph.G.
Address, 108	Roll of Honor, 1900, 118
President Edward Kemp, Esq.	George C. Diekman, Ph.G., M.D.
Roll of Post-Graduates and Gradu- ates, 109-110	Awarding Trustees' Special Prizes, 119
Thos. F. Main, Ph.G.	George A. Ferguson, Ph.B.
Address to Graduating Class, . . 110	Awarding Faculty Post-Graduate Prize, 120
Rev. E. Walpole Warren, D.D.	Smith Ely Jelliffe, M.D., Ph.D.
Address, 115	Awarding Edward Kemp Prizes, . 122
Fanny A. Blan, Phar.D.	Arthur H. Elliott, Ph.D.
Editorials	125
The Pre-requisite Clause.	
A Commendable Stand.	
Alumni, College and Class Notes	127-134



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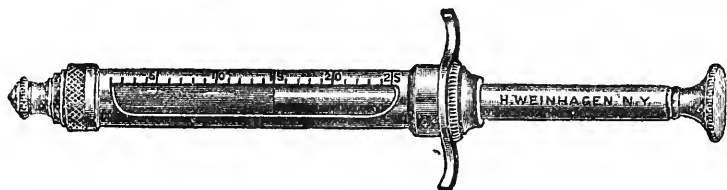
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VOL. VII.

MAY, 1900.

No. 5.

Urine Analysis by the Pharmacist.

By GEORGE C. DIEKMAN, Ph.G., M.D.

(Continued from April Number.)

PART THIRTEEN.

PHOSPHATES ($H_3PO_4 - P_2O_5$).

Phosphoric acid is found in urine combined with the alkalies, sodium, potassium and ammonium (Alkali Phosphates), and with the alkali earths, calcium and magnesium (Earthy Phosphates). In normal acid urine about 60 per cent. of the total phosphoric acid is present in the form of a di-hydric salt ($\times H_2PO_4$), and about 40 per cent. in the form of mono-hydric ($\times 2HPO_4$) and normal salts ($\times 3PO_4$). A somewhat variable, but always small, quantity of phosphoric acid may be present in the form of Glycerin Phosphoric Acid or in combination with neurin, as lecithin.

The average quantity of phosphoric acid, expressed as P_2O_5 , excreted in the urine of an adult during twenty-four hours amounts to about 3.5 grammes. Of this quantity two-thirds is in combination with the alkalies, and one-third with the alkali earths. Such quantities are, however, subject to considerable variation, even in the healthy individual.

The chief sources of phosphoric acid are as follows :

- A. From phosphates taken in as such, with the food.
- B. From the oxidation of certain organic bodies, such as lecithin, nuclein, etc., which may form part of the food taken in.

The quantity of phosphoric acid excreted under normal conditions depends upon the quantity taken in with the food. (During periods of starvation the quantity eliminated is at its minimum.) Furthermore, upon variations of body temperature, and upon the quantity of earthy bases, and salts of alkali metals ingested. Pathologically the quantity of phosphoric acid excreted is diminished in the case of most acute febrile diseases, in case of certain nervous disorders, renal diseases, rhachitis, gout, and chronic rheumatism. It may be increased in diabetes mellitis and meningitis.

Phosphates when eliminated in much increased quantity may give rise to turbid urine, in which case the condition is described as phosphaturia. Sometimes urine of this kind is clear when voided, but becomes turbid after standing a few hours. The reaction of such urine is often alkaline, or at most only slightly acid, or neutral. The sediment which appears is composed chiefly of ammonio-magnesium phosphate (Triple phosphate). The cause of this phenomenon is ascribed to a lack of acidity in the blood, or to certain nervous disorders which affect the secretory functions of the kidneys. Phosphoric acid forms three kinds of salts, primary, secondary and tertiary. Phosphates of the alkalis are all soluble in water. The primary salts ($\times \text{H}_2\text{PO}_4$) impart an acid reaction, the secondary ($\times 2\text{HPO}_4$) and the tertiary ($\times 3\text{PO}_4$) an alkaline reaction to the liquid. Of the phosphates of the alkali earths only the primary salts ($\times (\text{PO}_4\text{H}_2)_2$) are soluble in water, imparting an acid reaction. The secondary ($\times \text{HPO}_4$) and the tertiary salts ($\times 3(\text{PO}_4)_2$) are difficultly or not at all soluble in water. The solubility of the latter salts in urine is dependent upon the presence of other salts, such as the primary alkali phosphates and sodium chloride. If, therefore, urine becomes alkaline in reaction, spontaneously, or is rendered so by the addition of alkalis, phosphate of calcium, phosphate of magnesium, and ammonio-magnesium phosphate will separate out. Phosphates are precipitated by the following :

- A. Silver nitrate in neutral solution.
- B. Magnesia mixture.
- C. Uranium salts in acetic acid solution.
- D. Ammonia molybdate in nitric acid solution.
- E. Calcium and Barium chlorides.

If a sample of urine is treated with solution of soda or potassa or ammonia water, earthy phosphates will be precipitated, the alkali phosphates remaining in solution. The presence of the latter may then be established, after removing the precipitate of earthy phosphates, by the addition of magnesia mixture which will cause a white precipitate to form. Or the filtrate, after first acidulating with acetic acid, may be treated with solution of uranium acetate or nitrate, which will cause a yellow precipitate to form.

QUANTITATIVE ESTIMATION OF PHOSPHORIC ACID.

1. Gravimetric. A given quantity of urine is ashed, and the estimation is carried out by means of the ammonium molybdate method as follows :
Reagents required :

A. Solution of ammonium molybdate, made by dissolving 100 grammes of ammonium molybdate in enough water to measure one liter. This solution is added under constant stirring, to one liter of nitric acid S/G 1.200.

B. A concentrated solution of ammonium nitrate, made by dissolving 750 grammes of ammonium nitrate in enough water to make one liter.

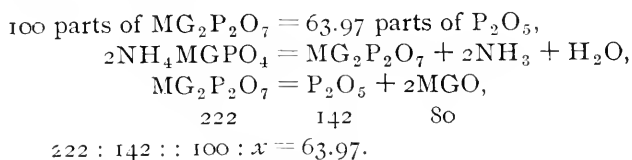
C. A dilute solution of ammonium nitrate made by dissolving 150 grammes of ammonium nitrate in enough water to make one liter.

D. Magnesia Mixture, made by dissolving 55 grammes of crystalline magnesium chloride, and 79 grammes of ammonium chloride in a mixture of 650 Cc. of water and 350 Cc. of 10% water of ammonia.

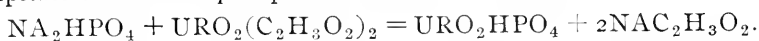
E. Ammonia water 2½%, made by adding 1 part of 10% water of ammonia to 3 parts of water.

Execution of method in case of urine. 20 Cc. of urine are placed in a platinum crucible, 0.5 — 1.0 gramme of a mixture of 1 part of potassium nitrate and 3 parts of sodium carbonate are added, and the whole evaporated to dryness. The dry residue is ashed, and the ash extracted with warm water and a very small quantity of nitric acid. The solution thus obtained is filtered into a beaker, washing the filter well. In operations where great accuracy is required, the filter is also ashed, the ash extracted in the same manner as before, and the liquid thus obtained added to the first liquid. To the combined liquids 50 Cc. of ammonium molybdate solution, and 15 Cc. of the concentrated solution of ammonium nitrate are added, the mixture stirred well and set aside for at least six hours at a temperature of about 60°C. After this time, the liquid is removed by decantation, allowing it to pass through a small filter, from the yellow precipitate (ammonium phospho-molybdate) which has formed. The precipitate still in the beaker, is washed with the dilute solution of ammonium nitrate, and after allowing the precipitate to subside, the washings are passed through the same filter as before. Now dissolve the precipitate in ammonia water (2½%) and pass the solution through the same filter as the first washings. Wash the beaker and filter thoroughly with ammonia water (2½%) and incorporate these washings with the solution already on hand. To this liquid now add 15 Cc. of solution of ammonium chloride (1 : 8) and 15 Cc. of magnesia mixture, stir well, and set aside for a period of twelve hours. After this time, transfer the precipitate (ammonia-magnesium phosphate), to a filter of known ash, and wash it with ammonio water (2½%) until the washings are free from chlorides. Allow the precipitate to become thoroughly dry, transfer it, together with the filter to a tared platinum crucible, and ignite. After cooling, moisten

the contents of the crucible (Magnesium Pyrophosphate $\text{Mg}_2\text{P}_2\text{O}_7$), with nitric acid, and heat cautiously over a small flame until this is again removed. Finally heat to redness, and allow to cool in a dessicator, and weigh, deducting the filter ash.



2. Volumetric: If phosphates or phosphoric acid are brought into reaction in hot acetic acid solution, with uranium acetate or nitrate, a precipitate of uranium phosphate is formed as follows:



Solution of uranium nitrate keeps its titre longer than uranium acetate and is, therefore, employed preferably. During the reaction nitric acid is liberated which will dissolve the precipitate of uranium phosphate. This may be prevented by the addition of solution of sodium acetate. A solution of potassium ferrocyanide is used as indicator, forming with uranium salts a red-brown precipitate of uranium ferrocyanide.

Reagents required:

A. Solution of di-sodic hydric phosphate which is the equivalent of 0.1 gramme of P_2O_5 in each 50 Cc. Prepared by dissolving 10.085 grammes of chemically pure salt ($\text{NA}_2\text{HPO}_4 + 12\text{H}_2\text{O}$), in one liter of water. The strength of this solution must always be ascertained gravimetrically, as the salt is of variable composition. If freshly recrystallized it is apt to be contaminated by adhering water, or if old it has usually effloresced. 20 Cc. of the solution are, therefore, treated with 15 Cc. of Magnesia mixture, and the precipitate treated as given under the gravimetric process for phosphoric acid. If it is found that 50 Cc. of this solution are not the exact equivalent of 0.1 gramme of P_2O_5 , it must be either diluted concentrated as the case may be. Examples:

a. 50 Cc. of solution were found to be the equivalent of 0.115 gramme P_2O_5 , consequently a dilution will be necessary as follows:

$$.1 : 50 :: .115 : x = 57.5$$

or 500 Cc. must be diluted to 575 Cc.

b. If it should be found that 50 Cc. of solution were the equivalent of only 0.085 gramme of P_2O_5 , concentration will be required as follows:

$$.1 : 50 :: .085 : x = 42.5$$

or 500 Cc. must be concentrated to 425 Cc.

After dilution or concentration, if either were necessary, it is advisable to make a second determination.

B. Solution of sodium acetate in acetic acid, prepared by dissolving 100 grammes of sodium acetate in 800 Cc. of water, adding 100 Cc. of 30 per cent. acetic acid and enough water to make 1000 Cc.

C. Solution of uranium nitrate or acetate, prepared by dissolving 35 grammes of crystalline uranium acetate or nitrate in enough water to make one liter.

D. Solution of potassium ferro-cyanide in water (10 : 100).

The exact titre of the uranium acetate or nitrate solution must be established in each case. This is accomplished as follows: 50 Cc. of the sodium phosphate solution are placed in an Erlenmeyer flask, 5 Cc. of the sodium acetate solution added, and the whole heated to boiling. To the hot liquid add the uranium solution, from a burette, as long as a precipitate forms. At the latter end, the uranium solution is added $\frac{1}{2}$ Cc. at a time, testing after each addition, with potassium-ferro-cyanide. This testing is done as follows: A few drops of the indicator (potassium-ferro-cyanide solution) are placed on a white porcelain surface, and by means of a glass rod, a drop of the liquid in the Erlenmeyer flask is brought in contact with them. The appearance of a pale red-brown color at the point of contact indicates the end reaction. The operation should then be repeated, for verification, using the same number of Cc. of uranium solution, as at the first trial. Malot recommends the use of tincture of cochineal as indicator. This strikes with uranium salts at first a bluish green color, which when the end reaction is reached turns to pale green. The mixture must be kept hot and shaken from time to time.

The uranium solution which is always made more concentrated than required, must now be diluted, in accordance with the results of the trial just made. This must be done in such a manner, that 20 Cc. of it are the exact equivalent of 50 Cc. of the sodium phosphate solution. Expressed as P_2O_5 , 20 Cc. of it are the equivalent of 0.1 gramme of P_2O_5 or 1 Cc. the equivalent of .005 P_2O_5 . Example: 50 Cc. of sodium phosphate solution required 19 Cc. of uranium nitrate solution, consequently 1 Cc. of water must be added for each 19 Cc. of uranium nitrate solution. In case more than 20 Cc. of uranium nitrate solution were required to complete the reaction, then the solution must be concentrated to the proper degree.

Procedure in case of urine. This is done in precisely the same manner as above, 50 Cc. of urine and 5 Cc. of sodium acetate solution are titrated while hot, with uranium nitrate solution. Each Cc. of the latter representing 0.005 grammes of P_2O_5 .

The sample of urine employed must be free from albumin. If this is not the case, it is evaporated to dryness, the residue mixed with potassium nitrate and sodium carbonate and ashed. The ash is then extracted with hot water, after which proceed same as above.

For the purposes of a very exact determination, by this method, 50 Cc. of urine may be precipitated with magnesia mixture, and set aside for 12 hours. The precipitate is then collected on a filter carefully avoiding any loss, and washed with ammonia water ($2\frac{1}{2}$ per cent.). It is then dissolved in acetic acid, diluted to 50 Cc. with water, adding 5 Cc. of sodium acetate solution and proceeding with the estimation as before.

SEPARATION OF EARTHY FROM ALKALI PHOSPHATES.

For the purpose of separately estimating the alkali and the alkali earth phosphates, the following method may be employed :

200 Cc. of urine are treated with ammonia water (10 per cent.) in excess. The mixture is allowed to stand 12 hours, after which time the precipitate which has formed, is transferred to a filter and washed with ammonia water (1:3). The filter is then perforated at its apex, and the precipitate washed into a beaker, and dissolved in a minimum quantity of warm acetic acid. The solution thus obtained is diluted to 50 Cc. with water, 5 Cc. of sodium acetate solution added, and titrated with uranium solution as before. The result will equal the quantity of P_2O_5 which is combined with calcium and magnesium. The difference between this quantity, and the total quantity of P_2O_5 in the sample will express the quantity of P_2O_5 combined with the alkalies. Or this quantity may be estimated separately, by treating the filtrate from the above operation with magnesia mixture, setting aside for 12 hours then collecting the precipitate on a filter, washing, and further treating in a like manner as for earthy phosphates.

(To be continued.)

Abstracts.

Fleas and the Plague.—The daily as well as the medical press, taking its cue from Simonds' article on the transmission of the plague in the *Annales de l'Institut Pasteur*, 1898, have regarded the flea as a probable agent in the spread of the plague. The fleas which live on infected rats and mice are supposed to bite human beings and thus infect them. Bruno Galli-Valerio (*Centralblatt f. Bakteriologie*, Jan. 6, 1900) disputes Simonds' conclusions on the following grounds. The flea that bites man (*pulex irritans*) has an ovoid body, is reddish-brown in color and has no characteristic comb-like structure on the head and prothorax. The flea of rats (*typhlopsylla musculi*) has a thin body, is yellow and has spines along the head and comb-like structures on the thorax. Other species of flea are found on the mouse. The important feature is that none of these fleas bite man and Galli-Valerio, notwithstanding the fact that he placed fleas on his body under watch-crystals, was unable to make them bite him. He therefore concludes that this means of transmission is not probable. He does not, however, give us any data as to what a hungry rat flea may do under unknown circumstances.—*Med. News*.

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OF THE
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Carnegie Music Hall, Wednesday Evening, May 2, 1900.

PROGRAMME.

Overture, "Merry Wives of Windsor," Nicoli.

Selection, "Ameer," Herbert.

Entrance of the Faculty of the College.

March, "Man behind the Guns," Sousa.

Entrance of the graduating class at half-past eight o'clock.

March, "Class of 1900," Humphrey.

Prayer.

Rev. Francis J. Clay-Moran.

Direct us, O Lord, in all our doings with Thy most gracious favor, that in all our works begun, continued and ended in Thee we may glorify Thy Holy name through Jesus Christ our Lord. O visit, we pray Thee, with Thy love and gracious favor the College of Pharmacy of the City of New York. Bless the President and every member of the Faculty, the Board of Governors, the graduates and the present students. May they be blessed and helped in their researches and studies, endeavoring to prepare the healing medicines for the sick and suffering, so that in alleviating pain and anguish they may remember the example of Him who went about doing good and helping the sick, and so partaking

of His spirit that they may at the last day hear the word of blessing addressed to those who help His sick and feeble ones, inasmuch as ye did it unto the least of these, my brethren, ye have done it unto Me. These blessings we ask for His dear name's sake. Amen.

Our Father who art in Heaven, hallowed be Thy name. Thy kingdom come, Thy will be done on earth, as it is in Heaven. Give us this day our daily bread, and forgive us our trespasses as we forgive them who trespass against us. Lead us not into temptation, but deliver us from evil; for Thine is the kingdom, and the power, and the glory, for ever. Amen.

The grace of our Lord Jesus Christ, and the love of God, and the fellowship of the Holy Ghost, be with us all, now and for ever. Amen.

Cornet Solo, "Selected," Mr. E. Keomnicke.

Address.

President Edward Kemp, Esq.:

Ladies and Gentlemen: It is my great pleasure to welcome you to the seventieth anniversary of this College. We have made very good progress and we are doing remarkably well and good service, I believe.

The program you see is somewhat lengthy, the speeches will be very short and sweet, and I now bid you all welcome and we will proceed by music as it were, from the band.

Gavotte, "Bewitching Beauty," Laurendeau.

Roll of Doctors in Pharmacy and Graduates read by the Secretary, Thomas F. Main, Ph.G.

March, "Marguerite," Wagner.
Mr. Thomas F. Main, Ph.G.:

Those who are to receive the Degree of Doctor of Pharmacy are as follows:

Blan, Fanny A., Staten Island, N. Y.
Conlin, Gayler B., Brooklyn, N. Y.
Molwitz, Ernestine, New York, N. Y.
Purdy, Elbert C., Croton Falls, N. Y.
Stubenrauch, William C., New York.
Thomas, John Harold, Yonkers, N. Y.
Vanton, Frederick, Middletown, N. Y.
Wettlin, Daniel F., Newark, N. J.

Conferring of the Degree, Phar. D., by President Edward Kemp, Esq.

President Edward Kemp:

By virtue of the power vested in me by the Charter of the College of Pharmacy of the City of New York, and by direction of the Board of Trustees of this College, I, Edward Kemp, President of the College of Pharmacy of the City of New York, hereby declare you to be Doctors in Pharmacy.

Mr. Thomas F. Main, Ph.G.:

Those who are to receive the Degree of Graduate in Pharmacy are as follows:

Adatte, Albert L., New York, N. Y.
Berowicz, Isadore, New York, N. Y.
Brandner, Herman A., New York, N. Y.
Brinckmann, Henry F., New York, N. Y.
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 Wertheim, Alfred, New York, N. Y.
 Wilson, William H., Wilkesbarre, Pa.
 Winne, Harry B., Kingston, N. Y.
 Wolodarsky, Clara, New Haven, Conn.
 Zahn, Rudolph H., New York, N. Y.
 Zinn, Walter, New York, N. Y.

Conferring of the degree, Ph.G.
 President Edward Kemp, Esq.
President Edward Kemp:

By virtue of the power vested in me by the Charter of the College Pharmacy of the City of New York, and by direction of the Board of Trustees of this College, I, Edward Kemp, President of the College of Pharmacy of the City of New York, hereby declare you to be Graduates in Pharmacy.

Selection, "Huguenots," Meyerbeer.

President Edward Kemp:

It is my great pleasure this evening to introduce to you the Reverend Doctor E. Walpole Warren, who will make the address to the graduating class.

Address to the graduating class.
Rev. E. Walpole Warren, D.D.:

Mr. President, Members of the Faculty, and Ladies and Gentlemen, Members of the Graduating Class of 1900: I think it is impossible for us to look into the faces of so large an assemblage as that I see before me to-night, crowding not only the body of the hall, but even to the extreme top of the extremest gallery in the hall, without recognizing how wide awake this great cosmopolitan city of New York is to

anything and to everything which tends to foster and to develop any branch and every branch of liberal education, even as far as such development is possible.

To one who has resided only twelve years in this great city most remarkable are the changes which my eyes have witnessed and of which you yourselves are equally conscious. I mean not only to apply the thought to architectural structures, which have so vastly increased in size in the last few years, and in beauty, nor to the facilities for transportation, nor to the improvement of our docks, nor to the numerous parks that are growing up in every part of the city, nor to any other of the great improvements which you yourself can easily recognize; but I think more marvelous still, and much more important, is the splendid development of the educational establishments of New York; developments so startling that it is hard to believe that I am speaking the truth when I say those alterations and developments have taken place within the last ten or twelve years. Consider for yourselves, ladies and gentlemen, the University of the City of New York. When I first came to this city it was hidden away somewhere down in Washington Square, in a small kind of a building, in a kind of a back street, and with very cramped facilities for educational purposes, and with very small resources. Look at it now as it dominates College Heights, with its magnifi-

cent buildings and its rich equipments. When I first came here I was taken up Madison Avenue in order that I might see Columbia University, and when I saw in 49th street, between 49th and 50th streets, those poor buildings representing the University of Columbia I must acknowledge I smiled—not an unkind smile, but a kind of compassionate smile—as an Englishman does smile when he sees something to smile at. Of course, we English never see a joke by any possibility, and yet it seemed even to me like a joke when I saw those buildings representing the University of Columbia. But look at it now! Within ten years moved to Morningside Heights, dominating this great city with its magnificent library; possessed of a splendid faculty; with vastly improved facilities for education and with huge endowments, and it is hard for you and me to believe all that has taken place within the last ten years.

May I, as there are ladies in the graduating class, also ask you to remember Barnard College, to which I was one of the honorary chaplains, at a time when I had to make inquiry of a florist, where upon earth Barnard College was established. I went into David's, the florist's store and asked and they said "It is next door," and next door to a florist, in the cramped surroundings of a little four-story, I think, brown-stone house, transmogrified into a college, in little miserable class-rooms, with every hindrance to educational efficiency, there I found Barnard Col-

lege, with its learned Dean, Emily Smith, whose name is honored and respected everywhere. Look at Barnard College now! Look at Brinkerhoff Hall! Look at Fiske Hall, and you will say again, it is hard to believe within ten years so great a change has taken place.

Now you may be inclined to say "O this is only a little exploitation of civic pride! This is only a little institutional competition." But it is not. The true interpretation and the solution of the fact is that New York—and that means New Yorkers—are all of them determined to have of everything the very best that can be got; and when they know that there is something good to be got, he is not an average New Yorker who does not mean to get it. (Applause.) He goes for it and attains it and produces the result.

Marvelous as have been these great changes, I do not think that the College of Pharmacy lags far behind, and this College of perhaps the newest and at the same time the oldest science on record has with gigantic strides been forcing itself to the very forefront, in advanced liberal education. It has taken its place amongst the other educational establishments not only of the city but of the whole country. It has gone forward, and made its graduates equals with the graduates of the other learned bodies, and has almost I believe extorted from the Legislature, the very fact on which I congratulate and compliment the College more than any other, that

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its graduates shall rank of social standing, equal to other graduates, equal also to the commissioned officers in both services, the Army and the Navy.

These, ladies and gentlemen, are achievements of the College of Pharmacy that speak for themselves. You belong to no miserable, small, petty, hidden, obscure institution of learning, but to a college that can hold its head up proudly with all the other colleges as doing work equal (Applause), as doing work as important, aye as doing work much more necessary to the public weal, than perhaps some of the older establishments, than some branches even of the universities, for upon the work of these ladies and gentlemen, these graduates to-night, depends the health and strength and growth and the very life it may be of yourselves and of your children.

I ventured to say just now that the College of Pharmacy was amongst the oldest colleges on record. My dear friends, am I not right in saying that it draws its charter from an age far antecedent to that which any other university can boast? It draws its charter from a higher potentate and authority than any who by their sign manual ever chartered any other university; for is it not so that the charter of the College of Pharmacy is to be found written in the oldest of all books that any of you knows or any one of you has read? For in the very first chapter of the Book of Genesis these words are written: "Behold I have given you every herb bearing seed, which

is upon the face of all the earth, and every tree, in which is the fruit of a tree yielding seed; and to you it shall be for meat."

So, my friends, you may go back, then, to the very earliest days of earth's existence for your charter. You may find your first Professor, Adam. You may find your first herbarium in the Garden of Eden, a larger, a grander, a more beautiful, a more striking, a more impressive, but at the same time perhaps not a much more elaborate one than you can find in the College of Pharmacy in 68th street. You can find also the first girl graduate, sweet girl graduate, Eve, whom I presume you will all of you acknowledge to have been the "first girl of her class."

Now I would dearly like, if I had the time and the opportunity, just to draw for you a little account and detailed sketch of the history of the College of Pharmacy from the time of its original foundation in 1829, up to its present condition in its present buildings, well equipped and fully established in 68th Street; but neither the time nor the patience of my audience will permit me to do it. But there is one thing I would like to be permitted to say, and that is, that whilst being shown over that College with its magnificent classrooms and its extensive laboratories, furnished with everything necessary for present modern conditions of Pharmaceutical study, I heard these words drop from one professor to another: "I don't think it can

be long before we shall want another building, better equipped and larger and with greater facilities for the education of the numbers that apply for admission," (Applause) and I venture to hope that this was not merely the expression of a wish, but that it was a prophecy of a quickly coming future.

And here, ladies and gentlemen of the graduating class, I want to say to you not only that we congratulate you in the name of the public, with all sincerity and our very heartiest congratulation, upon your success, and present position, we are proud to know you and glad to be honored by permission of your President to address you; but I want also to offer you the expression of this truth for your consideration, that it is upon *your* future efforts and success that not only your own personal success in life depends, but the growth and the enlargement and the enhanced interest of the public and the support of the public, towards your Alma Mater, the College of Pharmacy. (Applause.) It is, my friends, just in proportion as these and the other members of the College, who have gone forth in earlier years, show to us the necessity for such a college, that we of the public will not be lacking in coming forward to the support of it. May I not say so in your name? May I not say that every one of us will take an interest not only in the individual candidate who is now a graduate, but also in that college from whence he graduated and got his first start

start in life, which perhaps opened to him the very first step upwards on the ladder of fame? Won't you help to support it? I would say, ladies and gentlemen, graduates, do you show us the brains, we'll furnish the cash. (Applause.) Do you show us the increased demand that your superior knowledge produces, and we will be happy to supply the funds which shall satisfy it. It rests with you to make the College of Pharmacy so important to the City of New York that money shall flow in from every quarter to enable the Faculty to give it every requirement and supply every demand upon its educational ability.

I would venture also to say that this age in which we live is an age of revelation, not of mysteries. The knowledge of pharmacy has gone far and far away from the noisome mixtures of the witches caldron, and from the dark investigations of the old alchemists. It has gone a great way beyond that, and it requires in these days to exhibit revelations and discoveries of the deepest secrets of nature hidden away in herb and tree; requires secrets to be made known and not to be retained and kept locked up in the nostrums of the proprietors of the secret preparations of self-styled specialists. We want discoveries. Start forward upon that career. Show us that you are men and women with large and liberal ideas; that you have a desire to investigate; that you appreciate the dignity of deep research. Show us that you are

able and willing to work not merely for your own personal aggrandizement, but are also prepared to work for the greater weal of the Commonwealth, and there shall be no lack of support, no lack of encouragement, for we will not only clap our hands, we will cheer you on with liberal support in your upward path. We will hope for you, success greater, larger than has ever been attained by a graduating class of former years. Movement is in the air. Progress is in the air. The College of Pharmacy moves on, and do you graduate members show to the whole city first its need of you and secondly the advantages that it will have, from educating you, and such as you, more fully yet.

Now, ladies and gentlemen, I can only say in conclusion, be men and women of lofty aims, high ideals, spotless honor, of conscientious personal character; be men and women that insist upon integrity in the lowest, in the highest—work hard, work perseveringly, even though it may be sometimes almost unrewarded work. Be men and women who look for success in life not merely in pecuniary emolument, but also in raising yourselves, and in you your College, to the very highest position which it is possible for it to occupy. In this great city it is possible for you, gentlemen, to be content to be mere clerks in a drug store; it is possible for you to be satisfied with merely day after day compounding behind the counter the prescriptions of men, not much more intelligent than yourselves; it is possible for

you to try to win your bread and butter by mere selling, across the counter, these preparations which I have spoken of and patent medicines. It is in your power to be satisfied with this; but it is in your power also to win a success which stands upon something higher than such an aim in life, even upon knowledge used and knowledge aided to by efforts of deep research and discoveries in hardest struggle.

Now, ladies and gentlemen, I conclude my address to you. Be such as I have said and you will not want our future support—as now you have our praise. We will now pass on, with the President's permission, to the lighter and more pleasurable part of this great program. We will anticipate the jollity of tomorrow. (Great applause.)

Intermezzo, "La Rose," Ascher. Address.

Fanny A. Blan, Post Graduate Class 1900:

Mr. President, Ladies and Gentlemen: My first duty is in the name of both Post Graduate and Senior class to express to you our sincere appreciation for the high honor which you bestow upon us by your presence here this evening. Indeed it is gratifying, after having pursued a prescribed course of study, to have successfully reached the pinnacle of our ambition.

On the present occasion the past and future are at once brought vividly before us. Recollections and hopes crowd upon us together and we may with characteristic appropriateness give such thoughts their course.

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Upon our departure from this Institution, with which our associations have been so intimate, our feelings naturally are those of pleasure, but this pleasure is inevitably intermingled with lamentation. To sever connection with those who have spared no effort in laying for us the foundation of a brilliant educational career is the sad termination of student life. With what anxiety the student looks forward to graduation day, and upon its arrival it is with a keen sense of regret that he bids farewell to his Alma Mater.

We now pause on the threshold of responsibility. To-night we are confronted by kind friends, sweet flowers and enchanting music. Tomorrow finds us battling with the world. We enter the spacious field of science, knowing not whether our hopeful destiny shall be realized, and as years roll by with what becoming pride will we cherish the days spent in the Institution which was instrumental in paving for us an entrance into the scientific sphere. As we advance step by step, so will the reverence increase for our highly esteemed Faculty and beloved Alma Mater.

"Popular Medley," Humphrey.
Mr. Thomas F. Main, Ph.G.:

The prizes offered by the Alumni Association will now be awarded by Mr. Charles S. Erb, Ph.G., Graduate of the College and President of the Alumni Association.

Awarding Alumni Prizes.

Charles S. Erb, Ph.G., President of the Alumni Association :

Ladies and Gentlemen : Fellow Graduates : A duty devolves upon me as President of the Alumni Association which is indeed a pleasure. When one is made the instrument through which meritorious work and superior knowledge is rewarded, this duty is certainly gladly performed.

The Alumni Association consists of the children of this College and as such we naturally have a warm spot in our hearts for our Alma Mater, and a warm one, if such be possible, for the graduates.

As an incentive to good and faithful work, we award three prizes annually, consisting of a gold, a silver and a bronze medal. These are awarded to the three who have the highest standing on the Roll of Honor. At the recent examinations there were ten subjects, which made a total of one thousand marks, being one hundred in each subject. We require of the prize-winner not only that he should be perfect in pharmacy, in chemistry, or any other subject, but he must have a generally good excellent average in all subjects.

It affords me a great deal of pleasure this evening to award the gold medal or first prize to John W. Schlegel. (Applause.) Mr. Schlegel has received out of a total of 1000, 931 marks (Applause) or $93\frac{1}{10}$ per cent.

The second prize goes to John P. Regan. (Applause.) Mr. Regan obtained out of a total of 1000, 921 marks or $92\frac{1}{10}$ per cent. (Applause.)

The third prize is awarded to Harry B. Winne. (Applause.)

Harry B. Winne, not to be outdone by his other confreres, achieved 903 out of the 1000, or $90\frac{3}{10}$ per cent., not to drop below the 900 mark. (Applause.)

Fellow Graduates: I extend to you the best wishes of the Alumni Association and I hope that in your studies, which are by no means ended, you will always be at the top of the ladder. I also hope that you will always uphold the dignity of your profession, of your Alma Mater, and of the Alumni Association of the College of Pharmacy of the City of New York.

Selection, "Singing Girl," Herbert.

Reading the Roll of Honor.

Prof. George C. Dickman, Ph.G., M.D.

Mr. President, Ladies and Gentlemen, and Fellow Graduates: In conformity with an old-established custom of this institution, a Roll of Honor of the Class of 1900 was selected. Now it is customary in selecting this Roll of Honor to take the names of such students as have attained a very high average, both in their final written examinations and the laboratory term work, that is the practical work, and the number is usually thirteen. In compiling the Roll of Honor for the present class, however, it was found that two students attained exactly the same number of marks and, of course, the same number of per cent. That embarrassed the selection somewhat, and so not to be unjust to anybody this Roll of Honor was increased to fourteen, so that

accounts for the fact that the present Roll of Honor consists of the names of fourteen students or now graduates.

As you have already been told, the total number of marks possible for any one to attain was 1000 and out of these points, possible marks, Mr. John W. Sciegel received 931 or 93.1 per cent.; Mr. John P. Regan, 921 or 92.1 per cent.; Mr. Harry B. Winne, 903 or 90.3 per cent.; Mr. Robert C. Medl, 885 or 88.5 per cent.; Mr. Karl Dahlberg, 884 or 88.4 per cent.; Mr. Wm. H. Wilson, 883 or 88.3 per cent.; Mr. Theodore F. Endress, 875 or 87.5 per cent.; Mr. Alexander M. Hepburn, 862 or 86.2 per cent.; Mr. Frank D. Morse, 860 or 86 per cent.; Mr. Wesley C. Foster 850 or 85 per cent.; Mr. Reuben T. Groves, 841 or 84.1 per cent.; Mr. Isidore Berowicz 837 or 83.7 per cent. The next two gentlemen have received exactly the same number of marks and their names are read off in alphabetical order, that is, they occupy the same position as far as rank in the class is concerned; I simply read them off in alphabetical order. Mr. Arthur H. Goodale and Mr. Albert P. G. Kahler, who have received 835 points or 83.5 per cent.

Now, young gentlemen, it was my privilege and my extreme pleasure as a member of the Faculty to have been in daily contact with you for the last two years. Very many pleasant recollections couple themselves with that contact, I am sure. I also want to say that in view of the very severe examinations to

which you were subjected in all of the departments, you, as well as the fellow members of your class, certainly are entitled to a great deal of credit. The class as a whole certainly ranks, if not the very highest, still one of the very highest. You individually, of course, stand at the head of that class. I want to say, however, to you gentlemen individually now, that you are simply at the beginning of your career. You must not stop where you are at the present time. If you want to succeed you will have to continue to be successful in your future years, and I very sincerely hope, and every member of the class will join me in that hope—every member here will join me in that hope—that we may find you in the front rank of Pharmacy, just as we find you in the front rank of your class tonight. I congratulate you sincerely. (Applause.)

Cuban Dance, "Trocha," Tyers.
Mr. Thomas F. Main, Ph. G.:

The Trustees' Special Prizes will now be awarded by Professor George A. Ferguson, Ph.B.

Awarding the Trustees' Special Prizes.

Professor George A. Ferguson, Ph.B.:

Mr. President, Ladies and Gentlemen: The Board of Trustees of the College offers each year three prizes of \$100 each, to be awarded to the students who show the greatest proficiency in practical work. These prizes are distributed as follows: \$100 to the student of the Graduating Class who passes the best examination in Practical Phar-

macy; \$100 to the student who passes the best examination in *Materia Medica*; Commercial and Microscopic Pharmacognosy, and the third \$100 to the student who passes the best examination in Practical Chemistry. The question as to whom shall receive these prizes is determined by special examinations in the respective Departments. The competition is open to those members of the Class who have attained a position on the Roll of Honor, and also to those who have shown marked proficiency in their practical work in the respective Departments. In addition to the cash prize there is awarded in each case a Certificate stating the proficiency of the student in the special branch and signed by the Professor or Professors of the Department in which the prize was awarded. In Practical Pharmacy the examination consisted of compounding prescriptions, the manufacture of certain salts and the identification of official compounds and of alkaloids. The student who passed the best examination in this work is Harry B. Winne. In *Materia Medica*, Commercial and Microscopical Pharmacognosy, Mr. Alexander M. Hepburn received the highest per cent. The examination in Practical Chemistry embraced both Qualitative and Quantitative Analysis, and the prize in that branch is awarded to Mr. Albert P. G. Kähler.

Gentlemen, it was with great pleasure that I accepted for this evening the pleasant task of awarding, on behalf of the Board of Trus-

tees, the prizes for which you have so earnestly and so successfully competed, and I trust that the records which you have made in this practical work will serve as an incentive for your work in the future.

I will now, Mr. Winne, present to you, on behalf of the Board of Trustees, the cash prize of \$100 for the best examination in Practical Pharmacy. Our genial Treasurer, Mr. Bigelow, has assured me that the top bill in each one of these packages is a fair criterion of the bills which are beneath it. It affords me pleasure, Mr. Winne, to present to you the prize of \$100 and the certificate. (Applause.)

Mr. Hepburn, I present to you on behalf of the Board of Trustees, the \$100 cash prize for the best examination in Materia Medica, Commercial and Microscopical Pharmacognosy, and to Mr. Kähler, the prize for Practical Chemistry.

Concert Waltz, "Ammoretten,"
Gungl.

Mr. Thomas F. Main, Ph.G.:

The prize offered to the Post-Graduates by the Faculty of the College will now be presented by Professor Smith Ely Jelliffe, A.B., M.D., who has specially come on from Washington toward this prize.

Awarding the Faculty Post-Graduate Prize.

*Professor Smith Ely Jelliffe, M.D.,
Ph.D.*

Mr. President, Ladies and Gentlemen: There once was a fireman and he was very much beloved by the Association of which he was Chief. This fireman advanced in

years and in honors, and it became incumbent upon this fireman to leave the service of which he had been so proud. His fellow members decided that it would be a very befitting thing to present this chief of the service with some token of their affection and of their regard, and so they bought him a clock, and the gentleman that was to present the clock had an elaborate piece written, which he committed to memory, and the Chief, by some means unknown, but still always known, knew that he was going to get this clock and had a very befitting answer already committed to memory, and the auspicious night came off; the tense moment arrived. The speaker arose, hemmed and hawed, groped around in his mind for the proper words that he had learned, found they were not there; hemmed, hawed: "Chief, this is your clock." To which the Chief replied, his speech having also left him, "Oh, indeed; is this the clock?" Gentlemen, I shall not try to be as abrupt as this.

During the last ten days, as you know, there have been gathered from the four corners of the earth a large number of enthusiastic workers in a certain line of work, the Ecumenical Congress. They have come from the North and from the South, from the East and from the West; they have told their tales of woe; they have told their tales of sorrow; they have told their desires for the future; they have settled here as a focus. By way of contrast, ladies and gentlemen, we have

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here at the present time a focus. It is going to the North and to the South, to the East and to the West, and it is going to carry to each and every place a promise of hope, an ambition. It is a good thing to have an ambition. The ambition should not be too far off, away off in the skies; it is a very good thing to have the ambition pretty nearly in sight from day to day, to see it. But there is something better than having an ambition, from a practical point of view, and that is to have the place where the ambition can find its fruition. I think that some of you may recall that line of Kipling's that speaks of the East. He says, "Now it is not good for the Christian white to hustle the Aryan brown, for the Christian rules and the Aryan smiles, and he weareth the Christian down, and the end of the fight is a tombstone white with the name of the late deceased, and the epitaph drear, a fool lies here, to try to hustle the East."

Ladies and Gentlemen, we may be proud that we live in a land where hustle counts for something, and that is why I am here. I am here to present to a member of the Post-Graduate class a prize, which prize is only an indication that this gentleman has tried to do something here while he has been with us, and that we hope that he will carry this with him as an ambition to do something further. It is my pleasure ladies and gentlemen, to present to Doctor Elbert C. Purdy (applause) this "clock." (An analytical balance was awarded.)

Selection, "Lohengrin," Wagner.
Prof. Charles F. Chandler:

The Kemp prizes are offered by our distinguished and genial President, Mr. Edward Kemp, and they will now be awarded by our Emeritus Professor, Dr. Arthur H. Elliott, Ph.D.

Awarding the Kemp prizes.
Presented by Edward Kemp, Esq.
Professor Emeritus Arthur H. Elliott, Ph.D.

Ladies and Gentlemen: With the practical mind that is characteristic of our worthy President he has awarded three prizes, one to the Post-Graduate student who shall have passed the second best examination in the Post-Graduate class; one to the Senior student who passed the best examination in four laboratories—no easy task, you see—in the chemical laboratory, the pharmaceutical laboratory, the dispensing laboratory and the pharmacognosy laboratory; and the third prize to the Junior student who passes the best examination in the chemical laboratory, the dispensing laboratory, the pharmaceutical laboratory, and the pharmacognosy laboratory.

The prize for the second best examination of the Post-Graduate class is \$25, and goes to Dr. Ernestine Molwitz. (Applause.) The second prize to the Senior who passed the best examination in the laboratories goes to Mr. Karl Dahlberg (applause), a member of the Senior class, and the third prize to Mr. Valo A. Bradbury, for the best examination in the Junior laboratory

Dr. Molwitz and gentlemen, I will only detain you a few moments. At this time it is usual to give advice and I don't particularly care to do that, but I want to recall some things, some privileges that you have had that you hardly realize. Dr. Warren spoke of the University of the City of New York being cramped down in Washington Square. I want to call his attention and yours too to the further fact that the College of Pharmacy once occupied a couple of rooms in that building, sir, and I had the honor of being one of the assistants in the College at that time. Columbia College was kind enough, through the instrumentality of Professor Chandler here, to lend us the apparatus with which we made the lectures. You, on the other hand, have had well-equipped laboratories, have had facilities second to none in the world, none in England or in Germany or in the United States, not another college as well fitted as the College in which you have received instruction. I can speak of that because I am not one of the Faculty; I have been put on the shelf; I am one of the "has beens." So I may say to you in conjunction with that, these prizes are given to you for practical work.

That is all very true, but don't despise theory. The lights that light this building came from a little experiment made by Michael Faraday to find out the influence of a rotating magnet on a coil of wire. To-day this large city is lighted by innumerable engines and wires and lights that came from that little theoretical experiment. He wanted to find out what those currents rotating upon that magnet, what influence they were going to have on a wire; that is all. It is well enough to say that was mere theory; it grew to practical use afterwards.

Then again, don't lose courage. This is but the beginning. Maybe it is your first prize. It may be all, and it may be that you will go forward and be disappointed, perhaps; but don't lose courage. Be brave and you will reach still higher standards, and always think of some ideal, and don't despise theory, but keep a good tight grip on practice.

Entre Acte, "Passacalla," Gregh.
Distribution of flowers.

"Star Spangled Banner."

Music by Seventh Regiment Band,
George L. Humphrey, bandmaster.

Commencement Committee: William M. Massey, chairman; Clarence O. Bigelow, Reuben R. Smith, Arthur C. Searles, George B. Wray.

Abstracts.

Faith Cure.—Charles Dudley Warner says that the difference between the "faith cure" and the "mind cure" is that the mind cure doesn't require any faith, and the faith cure doesn't require any mind.—*Albany Medical Annals*.

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The Journal of Pharmacology.

A MONTHLY JOURNAL DEVOTED TO THE ADVANCES MADE IN THE VARIOUS DEPARTMENTS OF
MATERIA MEDICA, PHARMACY AND CHEMISTRY.

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Address HARRY B. FERGUSON, Phar.D., 115 West 68th Street, New York City.

EDITED BY HARRY B. FERGUSON, PHAR.D.,

WITH THE COLLABORATION OF

CHAS. RICE, PH.D. H. H. RUSBY, M.D. V. COBLENTZ, PH.D. GEO. A. FERGUSON, PH.B.
GEO. C. DIEKMAN, M.D. JOHN OEHLER, PH.G. SMITH ELY JELLIFFE, M.D., PH.D.

The Pre-requisite Clause.

We note with a great deal of pleasure that the agitation for the prerequisite clause has borne good fruit since the last meeting of the State Association. Much has been said and written on the subject, and we do not see but what it has all been for the benefit of the clause.

One great mistake which many make is that they compare the poorest graduate with the best licentiate; when we say poor we do not mean poor as far as worldly goods are concerned, but rather insofar as pharmaceutical knowledge comes into play. The graduate who perhaps has barely squeezed through is compared with the bright man who has passed a board examination.

Now this is unwarranted—it is not fair. The “poor” licentiate is probably never heard from, he simply drops out of existence, but the “poor” graduate at least keeps in the maelstrom and eventually becomes a good clerk. Take, for instance, the leaders in pharmaceutical affairs, the greater number of them are graduates and many of the remainder regret that they are not. Let us look at the other side of the question, that of the employer; we venture to say that most all employers would rather have a graduate than a licentiate as clerk, unless perchance the latter has “grown up” in the store; or, if the matter of wages, is the question, then, of course, the licentiate is often preferred.

Another excuse, or rather objection which has been offered, that of preventing the bright young man without means from acquiring an education, falls flat when we stop to think that the college student is usually obliged to “work out” his way through college just as much as “the other fellow” is obliged to work, but having higher ambitions feels that

there is no pharmaceutical course "too good" for him. As for the assertion that pharmacy is, after all, simply a "trade," while this may be true to a greater or less extent, there is no good reason why it should be so, and, as a matter of fact, it has been made so, not so much by the public as by the pharmacist himself, who is constantly induced to put in "side lines," as they are called, with the result that the true pharmaceutical department suffers.

Our contemporary, the *Pharmaceutical Era* has taken up the subject, and, with a spirit to be admired, has opened its columns to the advocates and adversaries.

We hope that this discussion will bear good fruit, and are willing to await the result.

In the meantime, however, let us enjoin upon all our members, as well as graduates of other colleges, the necessity of keeping up the agitation, with the hope that we will win ultimately. It cannot be that our forefathers, who organized the various Colleges of Pharmacy, some of which are nearing the age of one hundred years, did so because they expected pecuniary reward; but rather as a sacrifice on their part to assist the young men to gain a better education than they possessed. One would imagine, if one listened to some of the talk, that nearly every one connected with a college literally rolled in wealth, whereas this is not at all so.

It is the duty of the Alumni Association to protect the best interests not only of the College, but also those of the graduate.

A Commendable Stand.

The Alumni Association at its annual meeting took a firm and decisive stand in a matter which concerned the behavior of its members. It was proven beyond the shadow of a doubt that misconduct is to be punished even if it necessitates the expulsion of the offending members.

While the whole occurrence is to be regretted, and while it was unfortunate that any member should so far forget himself as to cease to be a gentleman, nevertheless, it was just and proper for the Association to act as it did. What is most gratifying is the fact that the members were a unit in the final vote on the question of expulsion. Not one voice was raised in support of the offenders nor was there one who voted against summary punishment. The Association certainly acted wisely in this matter and we hope that it will be a warning to a few others who are not above reproach as well as a severe lesson to the culprits.

There is such a thing as being boyish and at times "wild" as it is termed, but let us always be gentlemen; the high honor and esteem in which the Association is held by the Board of Trustees, by the Faculty and by such of the public as know us, demands that we keep our reputation unsullied and may we never again have cause for complaint as to the behavior of any of our members whether it be in our own councils, in public life or in business.

Alumni, College and Class Notes.

CONTRIBUTORS.

Alumni Association,	WM. A. HOBURG, Jr., Ph.G., 115 West 68th St., N. Y.
Alumni Notes, Socials, etc., and Classes prior to 1893, . . .	CHAS. S. ERB, 121 Amsterdam Ave., N. Y.
Bibliography,	ADOLPH HENNING, Ph.G., 68 William St., N. Y.
Class '93,	EUGENE F. LOHR, Ph.G., 508 Marcy Ave., Brooklyn, N. Y.
Class '94,	FRANK N. POND, 226 Ninth Ave., N. Y.
Class '95,	GEO. J. DURR, Ph.G., Randalls Island, N. Y.
Class '96,	CHAS. G. H. GERKEN, Ph.D., 169 S. 4th St., Brooklyn, N. Y.
Class '97,	E. A. MEINECKE, Ph.G., 14 Platt St., N. Y.
Class '98,	T. B. FURNIVAL, Ph.G., 115 West 68th St., N. Y.
Class '99,	THEODORE E. MEYERS, Dorranceton, Pa.
Class 1900,	ROBERT B. LIVINGSTON, 115 West 68th St., N. Y.
Class 1901,	ABERT C. THOMPSON, 115 West 68th St., N. Y.
Post Grad. 1900,	FANNY A. BLAN, Ph.D., 115 West 68th St., N. Y.
Legal Notes,	H. A. HEROLD, Ph.G., 108 Fulton St., N. Y.

Minutes Alumni Association, C. P. C. N. Y., Annual Meeting, April 25, 1900.

Meeting called to order at 5 o'clock p. m. by President Chas. S. Erb. There were present the following members: A. Henning, '76; F. Hohenthal, '81; C. S. Erb, '86; R. S. Brunner (Mrs.) '88; Geo. C. Diekman, '88; K. C. Mahegin (Miss) '89; Wm. J. Robinson, '90; H. J. Fischer, '92; F. Borggreve, '92; H. Heller, '93; A. Kraemer, '93; E. F. Lohr, '93; Wm. A. Hoburg, Jr., '93; L. W. Geisler, Jr., '94; F. Stock, '94; T. M. Davies, '94; H. A. Herold, '94; F. N. Pond, '94; L. G. B. Erb, '94; C. Grube, '94; Geo. J. Dürr, '95; H. B. Ferguson, '95; R. Gies, '95; B. R. Dauscha, '95; R. C. Laplin, '96; Edw. Uhe, '96; A. Deutschberger, '96; N. Cohn, '97; B. Feitsen, '98; F. W. Brecht, '98; M. Wolk, '98; T. B. Furnival, '98; F. A. Blan (Miss) '99; C. R. Tyler, '99; E. Pfaff, Jr., '00; J. P. Regan, '00; H. A. Reynolds, '00; F. X. Lynch, '00; C. A. Lotz, '00.

The reading of the Executive Board minutes of the past year was dispensed with on motion.

Address of the President, Mr. Chas S. Erb.

Fellow Members of the Alumni Association: We can look back over the work of the last year with extreme pride and with a great deal of satisfaction.

In some respects it has been unique, for instance in the matter of sociability it has far outstripped its predecessors; also in the way of outings; one was not enough, accordingly there was another arranged for, but I fear that two outings in one summer is too much.

The fifth annual reception and ball was the grandest of them all and threw the former ones into the shade.

The Committee on Papers and Queries gave us two very interesting lectures and a smoker which were well attended.

You can judge for yourselves how well the Alumni Day Committee has fulfilled its duties.

The Standing Committee on Entertainment arranged a reception and dance for every third Wednesday in the month, all through the College term and deserves the thanks of the Association.

All other committees have worked harmoniously and in all cases the work asked for, of the same, has been well and cheerfully performed.

The Treasurer's Report will be found to be very encouraging ; it will be seen thereby, that the Association is making good progress so far as its finances are concerned and it is to be hoped that this good work will continue.

All the officers deserve the thanks of the Association for their zeal and untiring devotion to its best interests ; not a single meeting during the year had to be postponed on account of a lack of a quorum.

A matter concerning deportment at the Alumni Day exercises in 1899 was brought to my notice in an official way, and acting according to the By-Laws, was turned over to the Executive Committee, which latter, I have no doubt, will make a report to you. It is hoped that the Association after proper deliberation will take a very decisive stand in this matter.

THE JOURNAL OF PHARMACOLOGY has during the past year again returned to the Association.

From last reports its future career seems assured providing it is given the help it so well deserves. I would like to dwell somewhat on the JOURNAL.

It seems to the management that the members do not support the JOURNAL as well as they ought, and many instances are found where members do not patronize the advertisers or if they do so, they fail to mention to them the fact that they are members of the Alumni.

Let us not forget that the advertiser wants to know how much good the JOURNAL is doing for him—and in helping us he expects help *from* us in return.

Too much cannot be said about the JOURNAL, nor can *too much* work be done for it ; it is a child of our own creation and we must see to it that it is properly brought up.

A few words on the Graduate Clause might be apropos. For years the graduates of this institution have been working for a recognition which is but just—and for as many years the sentiment has been against us ; just as it seemed within our reach we were betrayed by a few traitors in our own midst and by methods which at least *appeared* dishonorable.

But this is our own fault. How can we expect others to help us if we are too indigent to help ourselves.

Only by joining with the Alumni in its good work and by getting every graduate to become a member of our Association can we ever expect to reach the coveted goal.

Let me enjoin upon you the absolute necessity of continually working for the "pre-requisite clause."

A few words about our dear Alma Mater :

It has been deemed advisable by the Board of Trustees of the C. P. C. N. Y., to raise the sum of \$50,000 for the purpose of wiping out some of the indebtedness which is such a burden to the institution.

With this end in view a committee has been appointed by them ; the Chairman of this committee has had a conference with your President and has very strongly urged the appointment of a similar committee from this Association for the same purpose. As the Alumni Association was first in handing over money for the erection of this beautiful edifice, so ought it also to be the first to aid in removing the debt thereby incurred. I would suggest that the beginning be made to-day and that as many of the members as can do so will contribute their little mite toward this grand undertaking. Your President will cheerfully head the list with \$100.00.

With a cordial greeting of thanks to all the members, officers and committees for their good work during the past year, and with the hope that my successor will have the same kind consideration at your hands, I submit this report to you as your President.

Accepted and approved with the thanks of the Association.

CHARLES S. ERB.

Report of the Treasurer, Dr. Geo. C. Diekman ; approved as read, with a recommendation to place the Treasurer under bonds ; accepted with thanks.

Committee on Papers and Queries ; no report.

Committee on Entertainment, Dr. R. Gies, chairman, reported as follows : "The Entertainment Committee for 1899-1900 reports that there were held during the term, six receptions, all of which were well attended and decided social successes. The receipts for the year were nothing ; total expenditures ten dollars ; six dollars for music and four dollars for moving piano."

(Signed) R. GIES, *Chairman*.

Report accepted with thanks.

Committee on Publication ; no report.

Delegates to New York State Pharmaceutical Association meeting ; no report.

Committee on Property, H. B. Ferguson, chairman ; report accepted and approved.

Committee on Picture-hanging, A. Henning, chairman ; reported progress ; report accepted.

Registrar's report ; no report ; not present at meeting.

Motion made and carried to suspend the by-laws, to allow for the election of new members previous to the election of officers.

Motion made and carried that the entire roll of graduates, class 1900, be elected to membership in this Association.

ELECTION OF OFFICERS.

The president appointed as tellers, Messrs Lohr and Borggreve. For President, Chas. S. Erb, re-elected ; for First Vice-President, Nelson S. Kirk, re-elected ; for Second Vice-President, Frank N. Pond, re-elected ; for Third Vice-President, J. Perley Regan ; for Secretary, Rudolph Gies ; for Treasurer, Geo. C. Diekman, re-elected ; for Registrar, Chas. H. Bjorkwall, re-elected ; for Executive Board, to serve three years, terms expiring in 1903 : A. Henning, re-elected, H. B. Ferguson, re-elected ; for Executive Board to finish unexpired term of R. Gies, now elected Secretary, and ending in 1902, Wm. A. Hoburg, Jr.

Tellers discharged with vote of thanks.

Motion made by Dr. Diekman, seconded and carried, that a committee of three be appointed to draft a suitable set of resolutions, thanking the retiring Secretary, Wm. A. Hoburg, Jr., for faithful services rendered during the past six years.

Motion made and carried that a vote of thanks be tendered to Mr. Mandelbaum for kind services rendered the Association ; Secretary instructed to forward same.

Motion made and carried that a vote of thanks be tendered to the volunteer talent who favored us on Alumni Day ; Secretary instructed accordingly.

The following gentlemen were unanimously elected to membership in this Association, and having qualified ; order placed on the roll, viz. :

A. L. Adatte, A. R. Brochu, H. F. Brinchmann, J. W. Casey, A. E. Colcord, N. V. Cadmus, Edw. Dezurko, L. Dockendorff, Miss Clara F. Ehlin, A. F. Emeis, J. J. Fenton, W. C. Foster, Henry Frey, A. H. Goodale, R. T. Groves, S. S. [Goldner, J. F. Helmecke, Wilmer Hill, Pincus Jaffe, E. A. Keefer, J. V. F. Krauss, M. A. Kaehrlé, A. P. G. Kähler, C. A. Lotz, H. H. Lane, C. S. Lowenstein, Frank Leigh, Dan'l. Lowenstein, Wm. Lage, F. X. Lynch, L. P. Langhein, J. Levine, Sidney May, E. E. Molwitz, Jr., R. C. Medl, O. Matthiessen, J. A. Murphy, H. T. McClearn, F. D. Morse, C. A. O'Connor, T. J. O'Neil, E. F. Pfaff, Jr., T. E. Puudt, E. A. Prosser, Miss Fanny Rabinowich, C. F. Richter, J. P. Regan, Miss Hetty Sirota, Frank Schaefer, G. E. Shave, E. C. Stienach, J. W. Schlegel, W. P. Stowe, S. Scheuer, E. T. Schenck, O. F. Safarik, F. H. Schwabenhausen, C. A. Sexton, C. A. Thompson, A. P. Unbehau, S. J. Weidenhamer, B. Walter, G. R. Werner, H. B. Winne, R. H. Zahn.

W. E. Faber, class of 1879, to life membership, and Jos. C. Becker, class of 1896.

Communication from Vice-President, N. S. Kirk, now in Virginia, read and received, and placed on file.

Communication from Astor library to the Secretary in relation to Alumni publications furnished the library, read and received, and placed on file.

Motion made and carried that a special Executive Board meeting be called to audit and pass the bills against the Association, presented for payment.

Motion made and carried that a vote of thanks be tendered to Dr. Diekman for his kindness in furnishing a bulletin board for the use of the Association.

Motion made and carried that the President appoint ten (10) Alumni Ushers for Commencement.

Motion to adjourn, carried.

WM. A. HOBURG, JR., *Secretary*.

Alumni Outing.

"In springtime, young men's fancy turns lightly to that of love." Likewise the advent of May turns the fancies of all good alumni members to the annual outing, an event which we so dearly love. Breathes there a member of our Association who cannot recall pleasant reminiscences of our past glorious outings? The personal recollections of the writer would more than fill an issue of the JOURNAL. But let's get down to the future and see what we have in store.

As you all doubtless know, our outing will again be held at Donnelly's Pleasure Park, at College Point, on Wednesday, June 13th; the selection was made because of accessibility and unequaled facilities, not to mention many other little features, so well known to those who attended last year. Through the endeavors of our energetic committeeman, Geo. E. Schweinfurth, we, at this writing, hope to again elicit the co-operation of the N. Y. Retail Druggists, Bowling League in that portion of our programme. Their valuable services last year serve to make us look upon them as necessary requisites to success. We are particularly gratified in announcing that Fred Borggreve has graciously accepted his appointment on the committee. Dancing will come under his ban, hence surprises may be looked for. Sergeant Davies who is master of games, will modify his portion somewhat, he will cater to the ladies particularly. As for shooting, Chas. Grube, of the famous Grube Bros. won the "toss of the coin" and will therefore be sufficiently handicapped to "give us a chance." Arrangements have again been made with the Ferry Company and trolley lines to *run all night*, so bring your night keys. A winner is promised in the 3 D's event. I refer to *Donnelly's Dollar Dinner*, which will be served at 6 p. m. As in previous years the committee desire to again ask for an early start, the 1 p. m. boat from Egg street being the most desirable, it affording us ample opportunity to get the athletic events under way by 2 p. m. which would much better the chances of our base ball team defeating Charity Lodge. Committee: Nelson S. Kirk, Geo. E. Schweinfurth, Fred Borggreve, Thos. M. Davies, Chas. O. Grube.

No doubt we are all looking forward with pleasure to the thirteenth day of June, for that is to be a banner day in the annals of the Association.

This year's outing will be held at the same place as it was last year and about the same arrangements will prevail.

The R. D. B. A. have again expressed their willingness to assist in the bowling and Charity Lodge announces that it will again win the base ball game.

There is a rumor afloat about a trophy which is to be won or lost, but nothing definite is known.

However, one thing is certain, this is to be the best outing *there ever was*.

Boating, bathing, bowling, base ball, dancing, games, and last, but not least, a good dinner.

For the information of the members let me say that the place can be reached by the 99th Ferry, "East River," boats leave every hour from 1 p. m., or by either Astoria or Long Island City Trolley every fifteen minutes. Get out at Donnelly's, College Point.

Get the date down in your book of engagements—Wednesday, June 13, 1900, admission will be free—dinner probably one dollar.

Notes--Classes prior to '93.

Some of the old "stagers" present at Commencement were Henning, Herold, Arnenmann, Oehler, Searles, Erb, Ebbitt, Boeddiker, Borggreve, Schweinfurth, Main and of course Dickman,—perhaps there were others but we did not have the good fortune to see them.

Several "Alumni Shouters" were on hand, such as Mandelbaum, Swann, Hamlin, Yager and Griffin. The President ought to feel proud of the splendid reception accorded him by the boys (and girls), it certainly made him feel that they were with him and assisted him in getting off his little speech in good shape—many thanks ladies and gentlemen.

There is no need of saying much about the Commencement for of course you were there, but did you attend the aftermath? Did you see darkies eat without using their hands? Did you walk home in the rain without an umbrella, but wearing a silk hat? Did you feel "rocky" in the morning, probably because you didn't get a prize? Did you vow not to attend a Commencement until next year?

As "social editor" I would like to announce that I have received a protest from several members (ladies), against smokers; they suggest for the next social function a "Pink Tea." What about it, boys?

'93 Notes.

Both on Alumni Day and at Commencement we had a small representation. Heller, Hoburg, Kraemer, Stage and ourself constituted the delegation from '93. Even the ever-faithful Tanny was untrue to us, and as a result the cheering was very weak. This is the first year the '93 yell has not been heard, much to the joy of the Faculty and police.

Did you get one of the samples of a "don't use a much advertised substitute" article that Harry Heller was distributing?

Since the last issue of the JOURNAL has been in the hands of its subscribers, we have received forty-seven letters asking us how we knew the writers had been indulging somewhat liberally in bock beer. The one we meant did not feel called upon to make an explanation, but we were glad to see there were forty-seven consciences in the class, as well as that number of thirsts.

Our "Billy" Hoburg positively declined a renomination, which is the same as election, for the office of Secretary. His long and conscientious services to the Association were, strange to say, appreciated by the boys, and as a mark of the esteem in which he is held, he was elected to the Executive Board, of which we feel sure he will be a valuable member.

Kraemer brought his wife and child with him to the Commencement. He trotted short heats up and down stairs with his offspring. The pleasures of popperhood were duly noted.

"If I only had a job" is now a very popular song on West 68th street.

Get ready for the outing boys, as we will be sure to have a better one than ever before, owing to the great success we had with the last ball. We will be on hand early and hope the class will break all of its previous records.

EUGENE F. LOHR.

'94 Notes.

While '94 was not as well represented at the Commencement as on former occasions, we noticed a goodly number of the old boys there; among them were Herold, Dauscha, Cohn, Geisler, Davies and Pond.

Now that Linnig is married, can anyone "vouch for him?" Congratulations to our former Vice-President (Yes, Ed.).

Geisler and Pond represented the class at the Annual Banquet and Ladies Prize Bowling Night given by the Retail Druggists' Bowling Association on Monday, April 30th at Healys.

President Erb also graced the festive board with his presence, as well as President Reuben R. Smith of the Manhattan Association. Mrs. Smith secured first honors in the bowling contest.

Nelson S. Kirk has been resting from his many duties at Old Point Comfort, Va. An interesting letter was received from him just in time for the annual meeting, and it was the "making of the boy," for the members saw fit to re-elect him as First Vice-President, F. M. Pond being retained as his "second." Why "Chas. S." and "Nellie" have been South it is hard to tell.

William Kirkpatrick, Jr., who so seldom visits his Alma Mater, has been working steadily at Utleys, 8th Avenue and 17th Street, for the past six years—since graduation—and I understand he is more than appreciated.

Brevard Culp has also filled a good position with Messrs. Caswell, Massey & Co. for the last six years. Culp looks prosperous and well groomed. Spent his vacation last summer on the Continent enjoying the two months' leave of absence to his heart's content.

Abram Robinson has also "held down" one job since graduation, having been in the employ of Mr. R. R. Smith, 22d Street and Ninth Avenue, continuously since that time.

'94 boys must be "stayers."

F. N. POND.

'95 Notes.

Alumni and Commencement Day exercises having passed into the history of the Alumni Association as very successful events, our thoughts and united efforts are, or ought to be concentrating, to make the coming Alumni outing *the* most successful of alumni gatherings.

Among a laughing and joyful audience at the College on Alumni Day, I espied Aquaro, Dauscha, Ferguson, Gies, and Perilli. Everyone expressed sincere thanks for the entertainment which was most successful, and for which great credit is due to the committee who spared no endeavor in making the affair the grand success that it was.

Dr. Bjorkwall who is always in attendance at Alumni affairs, was unable to attend the exercises on Alumni Day because of an attack of the popular malady La Grippe.

Dont forget the Alumni outing, second Wednesday in June, at Donnelly's College Point, Long Island, N. Y.

At the election of officers of the Alumni Association on Alumni Day, Dr. Gies was unanimously elected Secretary to succeed Mr. Hoburg. It was rumored that he will *some day* be President. What?

Dont forget the Alumni outing, second Wednesday in June, at Donnelly's College Point.

Commencement exercises were attended by the following members of our class: Belfry, who is punching pills and spreading plasters at Gety and James' on 8th Avenue,

Bjorkwall who has recovered from his illness, Dauscha, who looks like a prosperous M. D. with his beard, Ferguson, editor of our valuable JOURNAL and who deserves great credit as such, Gies, without whom the exercises would have been a failure, Ohlandt, from Hoboken, where he reports excellent beer and business, Ryan, who came all the way from that Brooklyn town where, with Brown he is employed by the Bolton Drug Co. and our successful and worthy friend Herman Walter of 2d Avenue and 13th Street.

Once again, don't forget the Alumni outing, second Wednesday in June, at Donnelly's College Point.

GEORGE J. DÜRR.

'97 Notes.

Quite a number of the familiar faces of by-gone days were visible on Alumni Day, held April 25th, at the college. There was Allen, the Tarrytown man, Grube, the sober man, Remele, the learned man. Cohn the dancing man, Kaiser the sporty man and so on. By the way the affair was unanimously voted a success. Boys our next will be the outing at Donnelly's Grove, on the Sound, will give you full particulars at our next writing.

I have been told by several that our old reliable and only Ullman, really cracked a joke the other day. Why, even the war cry *Journal* referred to the incident.

Amadeo, our Costa Rican who left for his home immediately after graduating, is said to be serving as an apothecary in the Spanish navy.

Little Willy van Gilder is again working "Broadway." His old rendezvous.

Ferguson D.V.S. in other words, our Horse Dr., is again practicing the same in Lonesomehill N. J. by-the-Hackensack.

Alex. Young has again come into prominence as the "restauranteur" of the "Hammond baby," so the New York *Journal* of the 1st data tells us. The child is confined at Randall's Island, where Young is house physician.

Evans, of Utica, was said to be in town, but forgot us entirely.

Ralph Chandler Smith is considered the most proper thing in the form of a chemist's clerk on Broadway, I am told. He always did cut a dash. Such a jolly good fellow. you know.

'99 Notes.

Oh! yes, we are still in the ring, but you don't see us.

Just received an inquiry for the whereabouts of Rolfs. Haven't heard from him since last July. At that time he was with Lewis A. Ruff, 9th Avenue and 36th Street. I guess he's gone by this time. You had better advertise in the *World*.

Just found out where Steinmann is. Why, he is with Otto Frohweins, 3d Avenue and 91st Street. Just as sporty as ever, so I'm told.

Little Charlie Block is in Brooklyn, and still serving his apprenticeship with Eugene A. Lohr, '93, at 508 Marcey avenue.

Dickert the blonde is with the Presbyterian hospital.

Besthoff is better off with Gebhardi, 1st Avenue and 57th Street.

Schaaf is with Van der Emde, down on the Bowery, 313 I believe.

Evans is with Hofel, 230 Hamilton Avenue, Brooklyn.

Merring and Mohr are still at their old places and expend to spend part of their vacations up here with me in the Alleghany Mountains.

Just shook hands with Harry Rush (Ansky), a few minutes ago. He says he is still in the ring and I can vouch that somebody is treating him good for he is getting fat. Has been spending his vacation in the woods. He is connected with Roosevelt Hospital.

Now boys don't all write at once as I have more notes than I can attend to, my address is Dorranceton, Luzerne Co., Penn.

THEO. E. MEYERS.

Class Notes, '01.

Well boys, our happy days of the Junior year are now over. How do you feel after the year's study and how did you come out on your examinations?

Judging by the results of the examinations, our senior class will be one of the largest in the history of the College.

The following students may be found at their respective places of business as follows: M. G. Bube, with J. H. Morrey; B. Brown, with J. H. Morrey.

By the way, Mr. F. K. Schmidt being on the committee for class yell sent the following to be given at commencement, but as there were so few of us there it was impossible for us to give it.

"Benzol, Phenol, Pinol, Tar
Eugenol, Carbinol, Rah, Rah, Rah,
Chlorin, Bromin, Fluorin, Run
N. Y. C. P. 1901."

What do you think of it?

A. C. THOMPSON.

K & Notes.

Congratulations to the successful ones, and the heartfelt sympathies of all the brothers to the unsuccessful in the last examinations.

As soon as "Snulling Al" reached his New Haven home he struck a job at — what do you think, pushing the lawn-mower.

"Happy Jack" tells me that he has "fired" the old brown hat, but you ought to "hear" his new one.

Harry Reynolds is casting his smiles over the counter of Parkin & Co., 66th St. and Col. Ave.; Britton still stays with "Papa" Freess. Well you never knew him to fall behind the line, he has a job somewhere but hasn't informed us yet.

Will tell you more in the near and dear future.

A. C. THOMPSON.

Kay's Kurious Kolumn.

A noted statesman once said that the best way to repeal a bad law was to enforce it; to this the chairman of the 1900 Outing Committee quite agrees. If President Erb will insist on appointing him to this office, he has no other alternative than acting consistent. Examine if you will his reports as chairman and you will find nil on the debit and "good time" on the credit side. Hence you may rest assured that June 13th will prove a day pleasanter to the attending Association members and their friends who take advantage of it, than it will to the treasurer.

The outing will be a success, regardless of expense. This from headquarters.

Any old thing can swing in under this column, I told a fellow once that I thought love a dream, "yes," said he, "but marriage is an alarm clock," who'll join me in taking exception? "Dr. Gies?" "thank you," any one else?

"Even the walls have ears" so speak gently, I hear the N. Y. C. P. C. C. is going to "git together" and take a run down to Arverne on May 27th to get some of those beautiful lilacs. Meinecke is limbering up already as he is to be pacemaker.

Funny about Atlantic City and Washington trips in connection with marriage rumors; save your coin, boys, you may need it before the snow flies.

Ask "the deacon" about the freckle-faced Irish kids in Brooklyn calling him father.

SPECIAL, SEE PAGE 135.

Vol. VII

JUNE, 1900

No. 6

The
Journal of Pharmacology

**EDITED BY THE ALUMNI ASSOCIATION OF THE
COLLEGE OF PHARMACY OF THE CITY OF NEW YORK**

CONTENTS

Report of the Delegates of the College of Pharmacy of the City of New York, to the Convention for the 8th Decennial Revision of the United States Phar- macopœia	135
H. H. RUSBY, M.D.	
Editorials	139
Senior Examination Questions, N. Y. C. P., 1900 . .	140
Acetic Acid as a Solvent	147
Bibliography	148
A. HENNING, Ph. G.	
The Merrell—N. Y. C. P. Alumni Cup (Cut) . . .	149
The Outing	150
Annual Report of the Treasurer	152
GEORGE C. DIEKMAN, Ph.G., M.D.	
Class Notes	153-156



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Report of the Delegates of the College of Pharmacy of the City of New York to the Convention for the 8th Decennial Revision of the United States Pharmacopœia.*

BY H. H. RUSBY, M.D.

I have to report for your delegation to the Pharmacopœia Convention that of the three members, Dr. Rice was too ill to be present at any time. His place was filled on the first day by Professor Jelliffe, as alternate, and thereafter by Professor Diekman. Professor Coblentz was detained during the first day by the College commencement, but was in attendance continuously thereafter. The speaker was present throughout the Convention.

In view of the elaborate reports of the Convention which have appeared in the pharmaceutical press it appears desirable that this one should be confined to a discussion of the more important proceedings. These may be stated as being :

The incorporation of the Convention, with the attendant changes in organization.

The introduction of doses to the Pharmacopœia.

The introduction of proprietary articles.

The use of English equivalents for metric terms.

The extension of assay testing.

* Presented at the Regular meeting of the College held Tuesday evening, June 19, 1900.

Reasonable allowance for unavoidable variation in purity and strength of drugs.

The gradual seeking of uniformity in strength of our preparations with those of other countries.

The disposition of the accumulated funds of the 7th revision.

The personnel of the new officers and committee of revision.

Several of these subjects require but little discussion and can be quickly disposed of.

Doses.—The demand for these was very general, and there was no opposition from any source. Average doses only are to be stated, and responsibility is specifically disavowed on the part of the Pharmacopœia. The arrangement thus becomes one of convenience and not of authority. The doses will probably be printed in the body of the book and repeated in a list, to increase the convenience of reference.

English Equivalents.—Much inconvenience has resulted from the use in the 7th Revision of the metric terms exclusively, and it was desired to follow them, in parenthesis, with the English equivalents. To this it was objected that people would never learn the metric system while they had access to both terms; but the opposite view prevailed and both are to be used.

Assays.—The recognition of the value of assay processes has become general since the last convention, when it was strongly opposed, for the most part on grounds quite foreign to the merits of the case. Better still, methods have been improved and extended, rendering a further advance practicable.

Physiological assaying was absolutely tabooed, leaving antitoxin and other similar substances without legal or official standards and quite at the mercy of anyone inclined to take advantage of the situation. This result was due to the same narrow and unscientific spirit which opposed chemical assaying ten years ago. While the action taken was in the main right, and even necessary, the spirit referred to led to an active opposition to such measures as were not only desirable, but also practicable.

Allowable Variation.—No argument is necessary to show the importance of interpreting requirements so as to avoid giving them the color of impossibility.

International Uniformity.—For a nation which has pursued the policy of preventing exportations, so far as possible, as the United States has done, international uniformity has been a matter of little commercial importance, however desirable in principle. Now, however that exportation has forced itself into the position of a reality, it is highly desirable that our tincture of nux vomica and similar preparations should conform in strength to those of other countries when found beside them upon a foreign shelf. This uniformity is to be attained as rapidly as is consistent with domestic interests.

Proprietary Articles.—The convention was called upon to consider two distinct grounds of opposition to proprietary articles.

First, there was the purely ethical antagonism to recognizing such rights, or contributing to their interests. Second, the purely practical question of controlling by official standards the nature and quality of the articles. Against these, there stood professional inconvenience and the inconsistency of excluding from the Pharmacopoeia a very important part of the *Materia Medica* in common use. The latter interest prevailed against the ethical antagonism referred to, but could not overcome the essential conditions of the second objection. Therefore, every proprietary article, to secure introduction, must be either a product of nature of known origin or a synthetized product of definite composition, the identity, purity or strength of which can be determined. It must also be in common use by the medical profession. Furthermore, its mode of manufacture must not be kept secret, nor can it be controlled by unlimited proprietary or patent rights. The last is a faulty expression, as patent rights cannot be unlimited, but the error is a harmless one. This provision, it will be noticed, excludes copyrighted names, as a copyright is an "unlimited proprietary right." Some inconsistency may be discovered by the committee between this requirement and that in the section on "Nomenclature" which calls for the choosing of titles in harmony with general usage, and convenient for prescribing. However, the latter is in turn qualified by saying that in the case of chemicals of a definite composition, a scientific name should be given, at least as a synonym (note the use of *a* instead of *the* and of the qualification "at least").

Disposition of Accumulated Funds.—It is not generally known that the last committee encountered serious difficulty in regard to this matter. It was openly claimed that the Committee, in the publication of the Pharmacopœia, was independent, and that it was a co-partnership, and the partition of the funds was demanded. Acting under the best legal advice, the committee held that the funds were the property of the Convention. They therefore recommended a certain disposition, and this recommendation was acted upon by the Convention. An honorarium of \$25 per year was ordered paid to each member of the committee, the same amount (\$250.00) to go to the heirs of deceased members. One thousand dollars was ordered paid over to the next committee for the work of revision, and arrangements were made for the payment of the balance to the Convention. It was stipulated, however, that the outgoing committee was to be released from all responsibility for unpaid claims, before turning over these funds.

Incorporation of the Convention.—It was the difficulty regarding funds above referred to which stimulated the process of reorganization and incorporation. The study of this subject and the work preparatory to its accomplishment, were chiefly performed by Dr. H. C. Wood and Professor

J. P. Remington during the weeks preceding the convention. Dr. Rice, though in bad health, was an active participant. The draft was therefore ready and was found acceptable, with but few modifications.

The constitution provides for the scientific work of revision to be performed by a Committee of Revision, as heretofore, publication and other business matters to be conducted by a Board of Trustees to consist of five members elected by the Convention, together with the President of the Convention and the Chairman of the Committee of Revision. They are to fill vacancies in their number. Four of them shall constitute a quorum. They shall meet annually, or oftener if required. No provision is made for voting by writing, if a member cannot be present, and it is a matter of opinion whether this is allowed. If not, the times and places of meeting might be such as to throw the business into the hands of a highly select body. The members are to receive no compensation, but their expenses are to be paid. They are authorized to pay "experts and others for services performed," which is to be construed as including the Committee of Revision, a very proper authority. The elected members of this board are Messrs. Sheppard, Ebert, Thompson, Dohme and Sloan.

The New Committee of Revision.—Eight members of the old committee were reëlected. Some of the new members will prove of exceptional value in the revision work. The medical members are especially worthy, as they are not only very able as physicians, but are qualified to pass intelligent judgment upon matters pharmaceutical. They are also quite likely to watch one another closely. New York is not only ably, but fully represented with five members; a number equalled only by Pennsylvania. Finally we may be excused for the little institutional vanity of remarking that Professor Coblentz, our own representative, received the greatest number of votes cast for any member of the committee. The committee, as a whole, may be relied upon to improve upon the last edition.

The Convention stands out in the recollection of your reporter as having been the most fully crowded with hard and effective work, and with the least nonsense, and at the same time one of the most pleasant, of any meeting which he has ever attended.

It is important to add that provision was made for the early printing and publishing of an abstract of the proceedings.



Notice.

"Urine Analysis by the Pharmacist," will be continued in the July Number.

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EDITED BY HARRY B. FERGUSON, PHAR.D.,

WITH THE COLLABORATION OF

CHAS RICE, PH.D. H. H. RUSBY, M.D. V. COBLENTZ, PH.D. GEO A. FERGUSON, PH.B.
GEO. C. DIEKMAN, M.D. JOHN OEHLER, PH.G. SMITH ELY JELLIFFE, M.D., PH.D.

U. S. P. Convention.

SPECIAL attention is called this month to the report by Dr. H. H. Rusby of the Delegates of the College of Pharmacy of the City of New York to the Convention for the 8th Decennial Revision of the United States Pharmacopœia. It was presented at the regular meeting of the college, held on the evening of Tuesday, June 19th. The report is a synopsis of the work performed by the Convention and gives the details of the changes which have been suggested for the new Pharmacopœia. It was received with hearty favor and the JOURNAL takes great pleasure in presenting to every member of the college a copy of this issue containing the report. See page 135.

The Pre-requisite Clause.

The Pre-requisite Clause is now an assured fact. It is impossible on account of time and space to convey to our readers any more than that at the New York State Pharmaceutical Convention, held in Newburgh, N. Y., June 26-29, a resolution was unanimously passed in favor of the College Pre-requisite to go into effect January 1, 1905. Thus the fight has been won! Three cheers for the N. Y. S. P. A.

Senior Examination Questions. N. Y. C. P., 1900.

PHARMACY.

1. Name three official *inorganic bodies* which should not be brought in contact or triturated with organic or readily oxidizable bodies.

2. *Arsenic Antidote* :

(a) Give its full official title.

(b) State how it is prepared.

3. How is *Tincture of Ipecac and Opium* prepared? How many grammes of Morphin should 500 Cc. of it contain?

4. In assaying *Actuum Opii* by the official process, the first step consists in the addition of precipitated carbonate of calcium. Why is this necessary?

5. Name an official *fixed oil* which occurs in the form of a solid at ordinary temperatures.

6. How could you readily ascertain whether *Tincture of Nux Vomica* had been prepared from the Fluid Extract, instead of, as directed by the Pharmacopœia, from the Extract of Nux Vomica?

7. How is *Aqua Creosoti* prepared? Why does the Pharmacopœia direct that it be filtered through a well-wetted filter?

8. Give a method, stating quantities of ingredients used, in making a kilogramme of iodoform gauze.

9. Distinguish in the action of caustic and carbonated alkalis on *Salicylic Acid*. Give an outline of the process for the manufacture of *Mercuric Salicylate*, and state why prolonged washing with water should be avoided.

10. Name three sources for *Benzoic Acid* with a test of identity.

11. Give *tests of identity* for—

(a) Salicylic Acid.

(f) Benzole.

(k) Caffein.

(b) Tannic Acid.

(g) Beta-Naphthol.

(l) Chrysarobin.

(c) Thymol.

(h) Antipyrin.

(m) Morphin.

(d) Oxalic Acid.

(i) Strychnin.

(e) Glycerin.

(j) Piperin.

12. *Volatile Oils* :

(a) What two general classes of bodies are represented in their composition?

(b) Cite official examples under each class.

(c) Name and write formulæ for three oils which are of definite uniform composition.

13. How would you detect the presence of :

(a) Cane-sugar in Milk-sugar?

(b) Tartaric in Citric Acid?

(c) Acetanilid in Vanillin?

(d) Alcohol in a Volatile Oil?

(e) Saccharin in a powder?

14. *Enzymes* :

(a) Distinguish between, and define the two classes.

(b) Cite an example under each class, and explain the conditions and products of their action.

15. *Honey* :

(a) To what general class of chemical bodies does this belong?

(b) What substance is employed in adulterating or even substituting for honey?

(c) How may the presence of this adulterant be detected?

(d) Give three tests for the presence of sugar in urine.

16. Give details of an extemporaneous method of preparing *Quinin Hydrobromid* from the Sulfate, or Bisulfate.
17. Is there any variation in the chemical composition and activity of commercial *Aconitins*? If so, explain the causes.
18. How would you extract and identify the *alkaloids* present in a tincture of *Belladonna Root*?
19. How is *Glacial Acetic Acid* prepared, and detail its various uses?
20. How would you identify the presence of free *Hydrocyanic Acid* in natural oil of bitter almond; also how may this be removed from the oil?
21. You have a prescription calling for one avordupois ounce of 3 per cent. Oleate of Morphin. State :
 - (a) How many grains of Morphin will be required?
 - (b) How many grains of Morphin Sulfate will be required to furnish the required number of grains of Morphin?
22. *Pepsinum* :
 - (a) From what source is it obtained?
 - (b) State in detail how it is obtained from this source.
 - (c) How many times its own weight of freshly coagulated and disintegrated egg albumin should it digest?
23. Name the chief characteristics of the following groups of *fixed oils* :

(a) Olive Oil group.	(c) Cotton Seed Oil group.
(b) Linseed Oil group.	(d) Tallow group.
24. Give three tests by means of which you would establish the presence of *Albumin* in urine.
25. What is the source of *Creosote*? Name its chief constituents and state which one of these is employed for internal medication in preference to *Creosote*. Why is it preferred?
26. *Opium Decodorum* :
 - (a) State how it is prepared.
 - (b) State the per cent. of Morphin it should contain.
 - (c) State in what respects it differs from powdered opium.
27. *Acetic Acid* :
 - (a) Give two sources.
 - (b) Name the official kinds, giving strength of each.
 - (c) State how the presence of empyreumatic substances is detected.
28. Give an outline of a process for the manufacture of *Ammonium Benzoate*, naming the materials employed, and stating what precautions must be observed.
29. *Hydrargyri Iodidum Flavum* :
 - (a) Give its synonyms.
 - (b) State how it is prepared.
 - (c) State how it is affected upon exposure to light.
30. How is *Oleoresina Piperis* prepared? State whether the crystals of Piperin which are deposited in the finished product should be rejected, or reincorporated.

CHEMISTRY.

- I. Phosphorus.
 - (a) Name source.
 - (b) Give methods for its qualitative and quantitative estimation when present in organic matter.
 - (c) Give names, formulae and tests of identity for *five* acids of phosphorus.

2. State the comparative solubilities, in water, of the *carbonates* and *sulfates* of the following elements :

- | | | |
|---------|---------|---------|
| (a) Na, | (c) Li, | (e) Sr, |
| (b) K, | (d) Ca, | (f) Ba, |

Express degree of solubility as being either—*very soluble*—*soluble*—*slightly soluble* or *insoluble*.

3. Five details, with equations, of the Solvay-Process for the manufacture of sodium carbonate.

4. One gramme of a sample of *ferrous sulfate* was dissolved in water, and required for complete oxidation 35.9 Cc. of *decinormal potassium permanganate*. The per cent. of crystallized ferrous sulfate ($\text{FeSO}_4 \cdot 7\text{H}_2\text{O}$) present is desired.

$$\begin{array}{lll} \text{K} = 59.03, & \text{Mn} = 54.8, & \text{O} = 15.96. \\ \text{Fe} = 55.88, & \text{S} = 31.98. & \end{array}$$

5. Turpeth's Mineral.

- Give its chemical formula.
- What kind of a salt is it?
- Give a definition for this kind of a salt.

6. Give tests for the presence of the following in solutions :

- | | |
|-------------------------------|--|
| (a) Nitrites, | (c) $\text{C}_6\text{H}_5\text{NH} \cdot \text{CH}_3\text{CO}$, |
| (b) CH_3CHO , | (f) Propane triol, |
| (c) CrO_3 , | (g) SO_2 , |
| (d) H_3BO_3 , | (h) $= \text{CH}_3\text{COOK}$. |

7. What is *Paris Green* ; how is it manufactured?

8. Platinum.

- How may this metal be separated from the gold, iron, and other metals of the platinum group accompanying it?
- Enumerate *five* characteristics for which this metal is remarkable.
- What is platinum sponge? Explain its uses.

9. Complete the following equations :

- | | |
|---|---|
| (a) $4\text{KClO}_3 + 12\text{HCl} =$ | (f) $\text{C}_6\text{H}_5(\text{OH})_3 \cdot \text{COOH} + \text{heat} =$ |
| (b) $2\text{KClO}_3 + \text{I}_2 =$ | (g) $\text{C}_2\text{H}_5 \cdot \text{O} \cdot \text{NO} + 3\text{H}_2 =$ |
| (c) $\text{AgCl} + \text{Na}_2\text{S}_2\text{O}_3 =$ | (h) $2[(\text{C}_{17}\text{H}_{33}\text{COO})_3\text{C}_3\text{H}_5] + 6\text{H}_2\text{O} + 3\text{PbO} =$ |
| (d) $4\text{HgCl}_2 + \text{H}_3\text{PO}_2 + 2\text{H}_2\text{O} =$ | (i) $2(\text{CH}_2 - \text{CO} - \text{CH}_3) + 6\text{Cl}_2 + \text{Ca}(\text{OH})_2 =$ |
| (e) $\text{C}_6\text{H}_5\text{CH}_3 + \text{Cl}_2$ (boiling in sunlight) = | (j) $\text{C}_6\text{H}_5\text{OH} + \text{HNO}_3 =$ |

10. What is the *capacity* in *liters* of an iron flask which holds 70 av. pounds of mercury :

11. Iron.

- Give names, and state the composition of three ores.
- Explain details and theory of the process of *smelting*.
- Explain differences in carbon content between *pig iron*, *wrought iron*, and *steel*.

12. Give the chemical formulæ of the following :

- The *four* metallic salts known as

" <i>vitriols</i> ,"	(d) Pearl Ash.
(b) Sal Seignette.	(e) Calamine.
(c) Betol.	(f) Guaiacol.

13. Chlorates.

- (a) Give equations illustrating method of preparation from calcium hydroxid.
- (b) How may *perchlorates* be prepared from chlorates?
- (c) What products are formed upon heating chlorates with hydrochloric and sulfuric acids respectively?

14. Amines.

- (a) Define.
- (b) Into what classes are they divided?
- (c) Show by equations how they are produced.
- (d) Mention an important synthetic amine used in medicine.

15. Give the *commercial titles*, and write out the *structural formulæ* for the following compounds :

- | | |
|-------------------------------|----------------------------------|
| (a) Acet-para-phenetidin, | (e) Benzaldehyde, |
| (b) Alpha-oxy-propionic acid, | (f) Beta-naphthol, |
| (c) Ethane-thiol, | (g) Carbamide, |
| (d) Allyl-iso-sulfocyanate, | (h) Para-iso-propyl-meta-cresol. |

16. Alkaloids.

- (a) Define the term plant alkaloid.
- (b) Explain chemical and physical differences between these and the ptomaines.
- (c) How would you detect the presence of nitrogen?
- (d) By means of what solvent is morphin removed from alkaline solution?

17. Formaldehyde.

- (a) Give its chemical formula.
- (b) State how it is prepared on large scale.
- (c) Name and describe its polymeric form.
- (d) How may formaldehyde be separated and identified when present in food products?

18. Give equations, and name products produced by the action of a mixture of nitric and sulphuric acids on cotton; also state how they may be distinguished from one another.

19. Define and give a chemical formula for the following :

- | | |
|----------------------|---------------------------------|
| (a) a Ketone, | (f) a Nitril, |
| (b) an Alkyl haloid, | (g) an Amino aliphatic acid, |
| (c) an Acid chlorid, | (h) an Acid amid, |
| (d) a Mercaptan, | (i) a Glycol, |
| (e) a Disulfid, | (j) an aromatic Diazo compound. |

20. Phenols.

- (a) Define a phenol.
- (b) Explain, giving the reactions involved in the synthetic production of this class of bodies.
- (c) Give tests of identity for commercial "phenol."
- (d) Give name and formula of the compound produced by the action of concentrated nitric acid.
- (e) How would you distinguish a phenol from an aromatic alcohol?

21. Show by *three* equations, distinctive differences between *aliphatic* and *benzene* derivatives.

22. How do the "Petrolatums" differ chemically from the fixed oils and fats?

23. Esters.

- (a) Define.
- (b) Give examples of esters of organic or inorganic acids.
- (c) Explain "saponification," giving equations.

MATERIA MEDICA.

1. State the ordinary dose of a *Tincture* and name the important exceptions among official drugs.
2. State the standard strength of *Extract of Nux Vomica*.
3. State how *Opium* is obtained.
4. What are the principal medicinal properties of *Mercury*?
5. Name the five principal forms of Mercury used internally, and state the dose of each.
6. What is the composition of *Digitalis*?
7. To what class of medicines do the *Bromides* belong?
8. How does *Carbotic Acid* kill, and what is the treatment?
9. State the principal botanical characters of the *Labiatae*.
10. State some of the most important uses of *Tannin*.
11. Define *Hyoscyamus*.
12. Define *Opium*.
13. Define *Hamamelis*.
14. What is mostly substituted for *Crocus*?
15. What are the medicinal properties of alcohol?

PHARMACOGNOSY.

1. Name specimens No. 1 to No. 20, giving the same numbers in your answers. If any are spurious or adulterated, state what is wrong with them.
21. How can you distinguish *Grindelia Robusta* from *G. squarrosa*?
22. What are the differences between Mugwort and Wormwood?
23. State the characteristics of the best variety of *Pilocarpus*.
24. Name five Medicinal Cremocarps.
25. Name the two principal varieties of Benzoin, and mention the distinguishing characters.

ORGANIC CHEMISTRY.

1. Define the following terms :
 - (a) Empirical formula.
 - (b) Proximate analysis.
 - (c) Azo-paraffine.
 - (d) Compound ammonium.
 - (e) Mercaptan.
2. Complete the following equations :
 - (a) $C_2H_4 + 2 Cl =$
 - (b) $Ca (C_2H_3O_2)_2 + \text{heat} =$
 - (c) $C_3H_5 (C_{18}H_{35}O_2)_3 + 3 NaOH$
 - (d) $C_{12}H_{20}O_{10} + 6 HNO_3 =$
 - (e) $C_{20}H_{27}NO_{11} + 2 H_2O =$
3. Write the graphic formulæ of the following :
 - (a) Amido-ethane.
 - (b) Methyl carbinol.
 - (c) Citric acid.
 - (d) Butyl chloral hydrate.
 - (e) Allyl alcohol.
 - (f) Para-bromacetanilid.
 - (g) Unsymmetrical tetra-chlor-benzole.
 - (h) Tri-methylated hydrochlorate of para-rosaniline.

4. 5.3 grains of an organic compound containing C, H, and O were subjected to a combustion, and yielded 15.4 grains of CO_2 , and 2.7 grains of H_2O . Ascertain from these figures the formula of the compound, showing method of deriving at result.

C = 12 ; H = 1 ; O = 16.

5. (a) Define an amide?
(b) Give an example?
(c) Write its graphic formula?
6. (a) Give the chemical formula of carbinol?
(b) Give some of its other names?
(c) State the methods of manufacture?
(d) Give its properties?
7. (a) Write the chemical formula of propane, and then convert it theoretically into :
(b) A haloid ether.
(c) An alcohol.
(d) An oxygen ether.
(e) An ester.
(f) An aldehyde
(g) An Acid.
(h) An amine.
8. Show by writing equations, what two chemical reactions take place in the continuous process for manufacturing common ether?
9. (a) What is the atomicity of the wax bases?
(b) How do they differ in this respect from the base in the common fats?
(c) Give an example of a wax base, and fat base?
10. Explain by graphic formulae the nature of :
(a) Azo-compounds.
(b) Oxyazo-compounds.
(c) Hydrazo-compounds.
(d) Diazo-compounds.
11. Give the graphic formula of phenacetine, and explain its relation to ethyl alcohol.
12. Show by graphic formulae, and graphic equation, how rosaniline is produced from the action of mercuric chloride, on certain amido-compounds?

DISPENSING PHARMACY.

1. Name three kinds of *incompatibility*, giving an example of each.
2. Illustrate, giving example, an *unintentional incompatibility* which is unavoidable.
3. Give the unabbreviated *official title* of each of the following :
(a) Digallic Acid. (d) Citrine Ointment.
(b) Lugol's Solution. (e) Tartarated Antimony.
(c) Phenyl Salicylate. (f) Binioidide of Mercury.
4. Name three official Spirits which when mixed with water form a *turbid* solution, and three which will form a *clear* solution.
5. How is *Liquor Sodii Arsenatis* prepared? How does it differ from *Pearson's Solution*?
6. How many grammes of *powdered opium* will be required to prepare 1000 Cc. of tincture, each Cc. of which will contain .007 Gm. of morphin?
7. Give details of a process for the manufacture of *Sodium Salicylate*. State what products result when the salt is subjected to a high temperature.

8. Name the chief constituents of *Griffith's Mixture*. Why does the Pharmacopœia direct that it be freshly made, when wanted?

9. Name the two official *ammoniated tinctures* and state what menstruum is employed in their manufacture.

10. How is *Glyceritum Boroglycerini* prepared? What changes occur when water is added to it?

11. You have 4 grammes of Morphine Sulphate. After subtracting the quantity necessary to produce 120 grammes of Tully's Powder, how many fluid drachms of Magendie's Solution can be prepared from the remainder?

12. What change sometimes takes place in *Tincture of Iodine* upon standing? How does this influence its miscibility with water?

13. How is *Aromatic Sulphuric Acid* prepared? Name all its constituents.

14. Why should *Tincture of Ferric Chloride* be kept protected from light and why should it stand at least three months before using?

15. *Liquor Ferri Subsulphatis* :

(a) State how it is prepared.

(b) Give its synonym.

(c) How would you distinguish it from *Liquor Ferri Tersulphatis*?

16. You have a stock solution of Bichloride of Mercury, containing 5 grains in each fluid drachm. How much of this will you have to take to make 1 gallon each, of solutions containing :

(a) 1—1000.

(b) 0.05 %.

It may be assumed that the stock solution has the same S/G. as water.

17. Name three general *incompatibles* of each of the following :

(a) Emulsions.

(c) Infusions.

(b) Alkaloids.

(d) Fixed Oils.

18. Give an outline of the official process for the preparation of Extract of *Nux Vomica*, and name its active constituents.

19. Give the *percentage strength* of each of the following :

(a) Acidum Aceticum.

(e) Extractum Nucis Vomiceæ.

(b) Aether.

(e) Infusum Digitalis.

(c) Vinum Antimonii.

(f) Trituratio Elaterini.

20. *Criticise* the following :

(a) R

Syr. acidi hydriodici..... ̄ iv

Aquæ hydrogenii dioxidi ̄ i

Aquæ destil..... ̄ iv

Misce.

Signa: ̄ i every hour.

(e) R

Liq. potassii arsenitis.. ̄ ii

Syrupi ferri iodidi..... ̄ iv

Syrupi tolutani..... ̄ x

M. S. One half tea-

spoonful three times
a day.

(b) R

Atropinæ sulphatis..... gr. iv

Olei olivæ..... ̄ iv

Misce.

Signa: Apply exter-
nally.

(f) R

Olei ricini..... 30 Cc.

Glycerini 60 Cc.

Misce.

Signa: Tablespoon-
ful at night.

(c) R

Pot. et sodii tartratis..... 20 Gm.

Tincturæ ferri chloridi... 5 Cc.

(g) R

Sol. morphinæ sulph.. ̄ ss

Atropinæ sulph..... gr. ss

Aquæ,		Aquæ.....q.s. ad. ʒ iv	
Syrupi acidi citrici.....āā. 50 Cc.		M. S. Teaspoonful	
Misce.		every hour while	
S: ʒ three times a day.		in pain.	
(d) R		(h) R	
Quininae sulph.....	gr. xvi	Antipyriini.....	gr. xxiv
Aquæ.....	ʒ ii	Sodii salicylati.....	gr. xxx
Acidi sulphurici dil.....	q.s.	Misce.	
Ext. et ft. mist.....	ad. ʒ iv	Fiant pulv. No. xii	
M. et ft. mist.		Sigma: One powder	
Signa: ʒ i every three		when needed.	
hours.			

Abstracts.

Acetic Acid as a Solvent.—Acid acetic as a menstruum for the exhaustion of crude drugs has at this time become such a widely observed fact that it seems quite reasonable to assume that such a use of this agent has become established and will be generally recognized after all have tried and experimented with it. During the past year the list of drugs which have been thoroughly exhausted by this agent has very markedly increased, and it may be well to enumerate here those drugs which have been actually tried on a larger scale than experimentally. They are the following: Aconite root, Allspice, Arnica root, Belladonna leaf, Belladonna root, Black pepper, Buchu, Buckthorn, Burdock, Cannabis indica, Capsicum, Cascara sagrada, Cascara sagrada arom., Cassia, Saigon; Cardamon, Celery, French; Cimicifuga, Cinnamon, Ceylon; Cinchona, red; Cinchona, yellow; Cloves, Zanzibar; Coco, Colchicum seed, Coriander, Cypripedium, Dandelion, Digitalis, Ergot, Eucalyptus, Garlic, Gelsemium, Gentian, Gentian compound, Ginger, Jamaica: Hydrangea, Hydrastis, Hyoscyamus, Ipecac, Juniper, Larkspur, Leptandra, Lobelia, Mace, Malt, Marjoram, Nutmeg, Nux Vomica, Prickly ash, Red pepper, Rhatany, Rhubarb, Sanguinaria, Sarsaparilla, Sarsaparilla comp., Senega, Senna, Spigelia, Squill, Thyme, Valerian, Yellow Dock.—*Pharm. Review.*

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A. H.

Note—The above books are procurable at G. E. Stecherts, 9 East 16th St., N. Y. City.

Alumni, College and Class Notes.

CONTRIBUTORS.

Alumni Association,	WM. A. HOBURG, Jr., Ph.G., 115 West 68th St., N. Y.
Alumni Notes, Socials, etc., and Classes prior to 1893, . . .	CHAS. S. ERB, 121 Amsterdam Ave., N. Y.
Bibliography,	ADOLPH HENNING, Ph.G., 68 William St., N. Y.
Class '93,	EUGENE F. LOHR, Ph.G., 508 Marcy Ave., Brooklyn, N. Y.
Class '94,	FRANK N. POND, 226 Ninth Ave., N. Y.
Class '95,	GEO. J. DURR, Ph.G., Randalls Island, N. Y.
Class '96,	CHAS. G. H. GERKEN, Ph.D., 169 S. 4th St., Brooklyn, N. Y.
Class '97,	E. A. MEINECKE, Ph.G., 14 Platt St., N. Y.
Class '98,	T. B. FURNIVAL, Ph.G., 115 West 68th St., N. Y.
Class '99,	THEODORE E. MEYERS, Dorranceton, Pa.
Class 1900,	ROBERT B. LIVINGSTON, 115 West 68th St., N. Y.
Class 1901,	ABERT C. THOMPSON, 115 West 68th St., N. Y.
Post Grad. 1900	FANNY A. BLAN, Ph.D., 115 West 68th St., N. Y.
Legal Notes,	H. A. HEROLD, Ph.G., 108 Fulton St., N. Y.



THE MERRELL—N. Y. C. P. ALUMNI CUP.

The Outing.

The 13th does not seem to be an unlucky number for the Alumni for it was on the 13th day of June, 1900, that the most successful of all Outings of the Alumni ever held. The day was a magnificent one, ideal for an outdoor function and the attendance, the largest. About three hundred were present, all the boys being accompanied by their best girls.

The feature of the Outing was the different bowling contests.

The R. D. B. A. walloped the Alumni in good shape. This was due to the fact that the Retailers had been practicing all winter and came prepared to "do or die."

The Alumni prizes—gold, silver and bronze medals were won by R. Timmerman, Geo. Hitchcock and Charles White who rolled a clean score—40 out of a possible 40—they will be obliged to roll off the tie at a future date.

Connected with the bowling was the "surprise" of the Outing, namely, the presentation by the Wm. S. Merrill Chemical Co., of Cincinnati, of a Solid Silver Loving Cup.

This was presented by Mr. Jeffras, their New York Manager, in the following terms:

"As representative of the Wm. S. Merrill Chemical Co., it gives me great pleasure to present to you, the Alumni Association of the College of Pharmacy of the City of New York, this loving cup. If it should appear in years to come that it has happily been the means of promoting good will among the classes and good will to ourselves we shall consider ourselves fortunate as having been its sponsor.

"The College of Pharmacy of the City of New York stands second to none in this great country of ours as an educational factor in Pharmacy. Its graduates should be proud to call it their Alma Mater and to look up to it as the fountain of their success, and back to their college days, as among the best and happiest of their lives.

"Next to these college days should come the annual fraternal meetings—the reunion of goodfellowship, when ties are restrengthened by the rivalry of athletic contest. May the cup be an aid toward the binding of class to class in goodfellowship and each individual to his Alma Mater.

"Your President, Mr. Erb, will doubtless be able to say his little say in a vein happier than mine. Into his hands then and into yours we place the cup. With the annual outings in the times to come may the old song be as a remembrance of the present. 'We'll take a cup and drink it up in the remembrance of 'Auld Lang Syne.'"

It was fittingly accepted by President Erb with a few well chosen remarks, as follows:

"My Dear Mr. Jeffras; it is with a feeling of great pleasure that I accept this beautiful loving cup on behalf of the Alumni Association of the C. P. C. N. Y. Although I have been in the secret for some time past, yet it is a surprise to the members of the Association and a most agreeable one, I assure you.

"In accepting this cup I feel that a closer bond of friendship has been established between the Alumni and the Wm. S. Merrill Chemical Co., and through them with the wholesale trade.

"On these happy occasions when pleasure is substituted for business it reminds me of that old saying 'behold how good and pleasant it is, for pharmacists to dwell together in unity.'

"I feel certain that this gift will be instrumental in bringing out the latent talent of the different classes which has so long lain dormant and that the contests year by year will be keener and keener with more and more brotherly rivalry.

"These few remarks cannot be brought to a close without my thanking Mr. Mandelbaum, our genial 'Mandy,' the New York representative of the Merrill Company, for it was through his instrumentality that the Merrill Company became acquainted with the Alumni Association. He has always been our friend and on many occasions our associate.

"And now, Mr. Jeffras, in the name of the Alumni Association I thank you; fellow members of the Alumni Association I have just given thanks for you, now let all of you join me in giving three rousing cheers for the Merrill Chemical Company, for Mr. Chas. H. Jeffras and our Mandy, together, 'taking time from me.'"

The great enthusiasm with which it was received by the members must have made the donors feel happy.

Our genial friend Mandelbaum was so affected by the outburst of enthusiasm that for once speech failed him and he could only nod his deep appreciation of many thanks which were extended. The cup is a beauty and will grace the Alumni room—as will be noticed by reference to the illustration it is fittingly inscribed and bears the Alumni seal in gold and blue on its face. It was given as a bowling prize to be competed for by the various classes of the C. P. C. N. Y., who are members of the Alumni, each class to be its custodian until wrested from it by another class.

The first contest for its temporary possession will be at the next annual outing in June, 1901—second Wednesday—and no doubt there will be a spirited contest for the trophy.

The ladies' prize bowling resulted in the following as winners: Miss Molloy, first prize; Miss Andravette, second prize; Mrs. Geo. Schweinefurth, third prize.

The hundred-yard dash was won by Miss Kittie C. Owens.

Another feature of the day was the magnificent game of baseball played by the Alumni team against a team from Charity Lodge, F. and A. M.

The Alumni was ably captained by Dr. Gies and Charity Lodge by its "baby," Harry L. Jauss. Charity started in with a rush and soon had everything its own way, including the umpire and scorekeeper, but the inimitable Rudy and his cohorts played an uphill game, keeping the opposing nine down with only three runs to their credit for several innings, then they got a winning streak on and tied the game after Charity had made two more runs and the umpires had rendered several decisions favorable to both sides. In the last inning, however, the boys showed the stuff they were made of, and rolled up five more runs and as a result, Charity needed part of that mantle which they are ever ready to spread over their friends and fellows—thanks to the umpires, Lohr and Borggreve and the scorekeeper, Erb, the game was won with the score 10 to 5. No doubt the Alumni mascot "Gene" also had something to do with this result for he was all smiles.

Owing to the absence of the Alumni Rifle Association the shooting went on in a very desultory manner until several of the ladies took a hand and made nothing but bullseyes, then the boys woke up and showed that they too could handle a gun.

The shooting resulted as follows: Adolph Tscheppe, first prize, L. W. De Zeller, second prize, and Harry Yager, third prize.

Dance music, dispensed by Crowley's Eighth Regiment Band, was fully enjoyed by the fair sex and their partners, and nearly every piece was encored.

The supper, which was indulged in by at least two hundred and fifty of the members and friends, was a very enjoyable affair, as in many instances the inner man had been neglected for several hours or more. The supper bell was hailed with delight. It was during the supper that the loving cup was presented, Mr. Jeffras and Mr. Mandelbaum having been invited by the President to sit near the head of the table.

As speeches are tabooed at the outing, President Erb simply welcomed all the members and their friends, but after the cup presentation there were shouts for Jeffras, for Mandelbaum, for Schweinefurth and for Owens. Each responded in his own familiar way and then there was loud cheering for Dr. Diekman and Rudy, but neither responded. Quite a number came over after supper, and so it was that even at midnight the Park was not yet forsaken.

An excellent photograph of the group was taken and can be obtained through Chairman Kirk.

The different classes were all well represented and no doubt the class reporters will give due credit.

The Wholesalers were out in force and, as usual, enjoyed themselves to their heart's content.

Bjorkwall was in a fix, both the Alumni and Charity claiming him as a catcher.

But the ladies, bless them, they were superb, all in their best bib and tucker, proud of their husband or sweetheart if he made a strike or a poodle—for they are equally hard to make—and proud of the fact that they belonged to the Alumni.

Long live the happy remembrance and pleasant recollections of the

Outing of 1900.

E. R. B.

Annual Report of the Treasurer.

RECEIPTS.	Journal Acct.	General Acct.	Reserve Acct.
Rec'd from Chas. S. Erb,.....	\$ 42.92	\$373.09	\$313.72
Rec'd on (a) of JOURNAL, Subscriptions,	109.50		
Advertising,....	415.96		
Total,.....	\$568.38		
<i>Received on Account of General Fund.</i>			
Dues,.....		\$314.00	
Ball Committee,		136.69	
Ball Committee Return,.....		25.00	
Badges,.....		36.15	
Interest,.....		10.65	
	Total,	\$895.58	
<i>Received on Account of Reserve Fund.</i>			
Dues,.....			\$ 22.00
Interest.....			9.47
		Total,	\$345.19

EXPENDITURES—JOURNAL ACCOUNT.

Salary,	\$120.00	
Postage and Stationery,.....	8.00	
Printing,	435.70	563.70
Balance,		\$ 4.68

GENERAL ACCOUNT.

Treas. (a) Post. and Stat.....	\$ 7.50
Secretary's (a) Post. and Stat..	37.75
Com. on Papers and Queries,	19.99
Ball Committee,.....	25.00

Engrossing Certificates,.....	12.50		
Outing Committee,.....	16.54		
Junior Prizes,	23.70		
Carriage, Flowers (S. Morris),	14.00		
Entertainment Committee,...	2.00	158.98	
Balance,		\$736.60	
RESERVE ACCOUNT.			
No Expenditures.			
SUMMARY.			
Total Receipts,.....	\$568.38	\$895.58	\$345.19
“ Expenditures,	563.70	158.98	0.00
Balance,	\$ 4.68	\$736.60	\$345.19
Total Receipts,..... \$1809.15			
“ Expenditures,.....	722.68		
“ Balance, April 25, 1900,	\$1086.47		
TOTAL ASSETS.			
Furniture and Fixtures,	\$158.37		
Two Pianos,.....	365.00		
Platform,.....	20.00		
Pictures,	100.00		
Cash in JOURNAL Fund,.....	4.68		
Cash in Reserve Fund,.....	345.19		
Cash in General Fund,.....	736.60		
	\$1729.85		

(Signed)

GEORGE C. DIEKMAN,
*Treasurer.*RUDOLPH GIES,
H. B. FERGUSON,
*Auditing Committee.*April 25, 1900.
Examined and found correct.
May 20, 1900.**'93 Notes.**

The outing was the most successful we have yet had. Reuswig, Heller, Tannenbaum, Sasse, Kraemer, Imiels and “meself” had sense enough to take advantage of so good a time. Thanks to Tanny the class yell was again heard. One of our '93 boy's girls won the ladies' race, so you see we were right in it. Then, too, how could the Alumni have won the ball game without our assistance

Billy Renswig came all the way from Somerville to see the boys, and he got a welcome which I am sure made him feel that distance has made no difference in *our* feelings for him. *He* had been down to call on him shortly before, and were pleased to see how comfortably he is settled. He introduced *us* into as pleasant and easy a home as *we* have ever seen, and *we* flatter ourselves that *we* are experienced.

Dr. Tannenbaum is now full fledged. He deserves all credit, for after so many difficulties, such as ill health, to contend with, he showed his grit by hanging on.

Happy Harry, cherubic as ever, certainly rooted for the boys in grand shape.

'94 Notes.

Benj. T. Williams whose travels in the interests of "Maltzyme" led him over several States, occasionally drops us a line. A recent letter from him announces that while visiting the land of Poets and Robius as he terms Staten Island he met a '94 graduate in the person of Gray B. Sullivan, who is now the owner of two stores on the island, one at 49 Castleton avenue, West New Brighton, also a branch store on Richmond Terrace. Mr. Sullivan now weighs about 200 pounds, so must be prospering.

Anness, whose name headed the list on roll call in days gone by, has accepted a position with Reid, Yeomans & Cubit, in their handsome new pharmacy, 140 Nassau street, New York, where he looks after the prescription department for these "modern druggists to the people" as their ads read.

Maring has been employed for some years past with John Eckert, at Roseville and Newark, N. J., where he is right hand man. He is married and looking well.

Keller was seen recently on the ambulance from a Brooklyn hospital where he is fitting himself for a career in medicine. He is now an M.D.

The outing will doubtless be a big success as most of the boys in town intend to be there. We hope '94 class will be largely represented and carry off lots of laurels.

'95 Notes.

Again am I called upon to perform the pleasant duty of informing you all that we have lost to our profession one who has finally acquired a higher (?) ideal, Otto Hensel, our Gold Medal man, and successful competitor for the \$100 prize in Pharmacy, was graduated as M.D. from the College of Physicians and Surgeons of New York.

On the 13th of June the Alumni Association held its Annual Outing at Donnelly's, College Point. The outing was voted by all to be a very successful affair. Our class was represented by Aquaro and his brother, an M.D., Bjorkwall, Dauscha, Ferguson, Gies, Ohlandt and others.

During the progress of the various games we were constantly amused by laughable mistakes due to over zealousness on part of the contestants. The umpire called strike two when the ball struck the bat as foul, and himself. Another feature was that the umpire called two balls when the pitcher threw the same ball.

Dr. Gies ran the bases, not knowing that he was out on three strikes.

Oh! if I had only caught that nice fly, I might have made a triple play and won the game, says Dr. Ferguson.

After partaking of the excellent repast for which Mr. Donnelly is noted, we were agreeably surprised by a representative of Merrill & Co., who presented to the Alumni Association a handsome silver, gold-lined loving cup.

'97 Notes.

Harry Florence and Willy Slattery, the "*Bunch of Malline fame*," are conducting one of the finest stores in South Brooklyn at 13 Grant Square.

Cohn says he would rather work than have a vacation this summer. How noble of Cohn. (?)

A rumor is afloat that Ferdinand has become a Benedict, having married a Southern girl. Still to be confirmed.

Morey is said to be at Middletown, N. Y., *working*, with emphasis on the working.

Gilman is out West, in the extreme West (Washington).

Mr. Henry "Red Head" Beeler is now located at H. Kamlak's store, Newark Ave., Hoboken, N. J. [Germany].

The southern wind, with gentle sighing of relief, tells us that "Sloss" the prodigal is again North among us, having left his Alabama home. So far he has not been seen by any of our class standbys.

'99 Notes.

My dear classmates. You're no good! I have been laboring under that impression for the last six months and now I'm going to give vent to my feelings and tell the class just what I think and probably I'll get a raise in salary. I think that we are the slowest class the New York College of Pharmacy ever graduated. Too slow to be ambitious (I'll admit there are a few active members in the class, but very few and far between).

Secondly. I think it's the dumbest class—too dumb to write to the reporter

Thirdly. I think it's the most ignorant class—too ignorant to come in out of the rain and find out what's agoing on around our college.

Fourthly. I think it's the stingiest class. Too stingy to subscribe for your college journal, or at least to invest one cent for a postal to write the reporter once a year. No doubt you have read a verse in the Scriptures (all drug clerks have) where it says it is as "hard for a rich man to enter the kingdom of heaven as it is for a camel to pass through the eye of a needle." It is harder for me to write notes for our journal when I have nothing to write. If I were a novelist like our younger reporter, Robert Livingston of 1900, probably I could make something out of nothing. Maybe this editorial is all in vain, but I do hope some lost member of our class will be brought to light through its highly esteemed merits. I see by the New York *World* the college graduated another class this year; it's too bad that your reporter has to search the columns of the *World* to find classmates—I suppose I'll soon have to look in the *Salvation Army War Cry*. Now, boys (and ladies too), you certainly have a few minutes once a month in which you could at least drop me a postal. Before closing these few remarks I have something which will change the subject somewhat. Our mutual friend, Elbert C. Purdy, Phar.D., has purchased the business of G. W. Abrams at Croton Falls, N. Y. Mr. Purdy has been a very faithful student and a classmate to be proud of. I am sure the class wish him success.

Yes, Rolf, Pfabe, Merring and Mohr were there, too, but did not have gumption enough to line up for the hundred-yard dash.

Shield is managing Bayha's store, 359 2d Ave. You ought to see his flowing beard. Just got on track of Ulmschneider. He is at C. W. Race's, Bay Shore, L. I.

Zincke = Zn 64.9 is at 133 8th Ave.

Riegel is still with his papa. That's right, Louis, no place like home.

Walter is at Wallenech's, 160th St. and 3d Ave.

Munger was in Scranton on June 2d. He returned to the metropolis the next day with such a headache.

Benjamin F. Maxey, President, '98, was in to see me a few days ago. He is still in the ring. He has just returned from Niagara, where he will probably go into business in the near future. Ben is looking a little better than usual.

T. E. M.

Notes for Class of 1900.

Were you there?

Did you see the fellows look so sweet, so full of wisdom? What a night it was! Mortar-boards and gowns, beer and pretzels, pretty girls and old maids, papas gray and mammas gay, dignified profs., portly trustees, music divine, interspersed with much applause. We shall never forget that night.

Winnie won the hundred dollars. I told you so.

Dahlberg showed the fine training Herr. Erb had given him. I wonder what he will do with the \$50?

What did you think of the speech that Prof. Jelliffe made? Wouldn't it jar you, when the alarm goes off, I mean.

I wonder how it feels to be a prof.

Matthieson has located himself with Wilson, Ph.G., on Willis Avenue. Says he is getting \$15.00 per. I wonder whether he means per month or per day. He is certainly worth double that to any man (nit).

Kahler seems to know a thing or two about the mysteries of chemistry. I hope that he will not spend the \$100 all in one place. By the way he has at last succeeded in getting a job. (You know all Pharmacists are a little skery concerning these prize takers, they kinder think that they might know more than they do themselves.) I don't blame them either.

Lotz is still pounding the pills for Von Beiser up in 149th street and Trinity place. By the by I received a most pleasing letter from Charlie the other day. In it he informs me that his employer is convinced that he cannot do without him. He says that he is receiving \$18.00 per week. Oh, wouldn't that bump you. Solomon was not far from wrong when he said "All men are liars." What say you?

Eudress still owes me that little bill. This is the only means by which I can call same to his notice. I hope that he will come and cough up soon.

I guess I shall have to break away for a while. But before doing so I want to ask you to drop me a line or so once and a while, and let me know what you are doing for yourself. Address all communications to the College. Hope you will enjoy yourself during the summer months. Shake a day day,

Yours and etc.,

"Little Robbie,"

1901 Notes.

It is impossible for your reporter to get out any notes unless he hears from you. So you will do him a great favor if you will drop him a line once in a while.

Archie Hoover was one of the prize winners in the recent "exams." Good for you, Archie.

I am pleased to note that Mr. J. H. De Giorgi is dispensing pills behind the counter of Wm. J. Sumers, 57th St. and 9th Ave. He could give us some news concerning one of our lady classmates if he would.

KΨ.

The latest song of the day, entitled "I Wish I were Back in Old New York Town," composed by Al. Kaelrle and sung by the "Tripod Quartette." Copies of the song will be sent upon receipt of \$1.50. Send the money to "Al." He can take good care of it.

"Happy Jack" is an awful talker, but I have come to the conclusion he has forgotten how to write, as well as several others.

Pfaff hasn't set North River on fire yet.

Let me hear from you all.

A. C. THOMPSON.

The Journal of Pharmacology

EDITED BY THE ALUMNI ASSOCIATION OF THE
COLLEGE OF PHARMACY OF THE CITY OF NEW YORK

CONTENTS

Urine Analysis by the Pharmacist	157
GEORGE C. DIEKMAN, Ph.G., M.D.	
A Poisonous Plant Related to Rhus (Cut)	161
H. H. RUSBY, M.D.	
Letter	162
H. C. JORGENSEN, Apothecary U. S. S. "Yankton."	
Necrology—Miss Marie A. Main	163
A Menace to Pharmaceutical Education	164
"Charity's" Invitation	165
Examination Questions, Board of Pharmacy	166
"A Good Thing"	172
Notes from Newburgh	173
Class Notes	174-178



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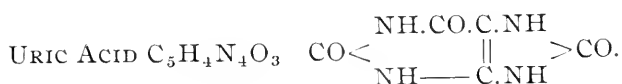
No. 7.

Urine Analysis by the Pharmacist.

BY GEORGE C. DIEKMAN, Ph.G., M.D.

(Continued from May Number.)

PART FOURTEEN.



Uric acid next to urea is one of the most important nitrogenous constituents of urine. It exists in urine most often in combination with sodium, potassium and ammonium, as salts of these, rarer in combination with calcium and magnesium. While in mammals urea is the chief nitrogenous waste product, in reptiles, birds, etc., uric acid is the form in which the greater portion of nitrogen is excreted. Under normal conditions a healthy adult excretes from 0.4-0.8 grammes of uric acid daily. This quantity however, as in the case of urea, is subject to considerable variation, even in condition of health, depending upon the quantity of nitrogenous food ingested. When the conditions are normal, and the diet rational, the excretion of uric acid and urea runs nearly parallel, (average 1-45, Salkowsky). A meat diet causes an increase, a vegetable diet a diminution in the quantity of uric acid excreted. An increased excretion always follows excessive muscular exercise. Infants and children excrete relatively greater amounts than adults. Uric acid may be considered as a direct waste product resulting from the decomposition of nuclein. Nuclein is derived from certain complex proteid bodies, known as nucleo-

proteids, these in turn constituting the chief constituent of the nuclei of most cells. Hence any condition, pathological or otherwise which is accompanied by an increase of cells (such as the white blood cells for instance) causes an increased excretion of uric acid. On the other hand, any condition which results in a diminution of these cells causes a decreased excretion of uric acid. In the case of uric acid an increased quantity is of greater pathological significance than a diminished quantity. In the case of urea the reverse is true. The chief danger resulting from the excretion of an increased quantity of uric acid is its tendency to form deposits, and at times calculi. This is particularly true in the case of some individuals. This condition is known as lithemia or uric acid diathesis. The disease known as leukemia is accompanied by an increased excretion of uric acid, as much as 4-6 grammes daily being excreted. The number of white blood cells is greatly increased in case of this disease, and this fact no doubt accounts for the excessive quantity of uric acid excreted. Contrary to general opinion the quantity of uric acid eliminated by way of the urine is not increased in every case of rheumatism and gout, in fact in certain cases the quantity may be diminished or even suppressed owing to the deposition of uric acid and water in the various joints of the body. Many nervous disorders cause an increased excretion. The administration of certain drugs likewise causes an increased excretion, among others such drugs as pilocarpine and sodium salicylate may be named. The fact that the latter drug causes an increased excretion of uric acid has been questioned, but evidence that it does cause an increase preponderates. A diminished excretion of uric acid is noted in cases of diabetes mellitus, also after the ingestion of many drugs, such as quinine, caffeine, antipyrine, and iron and lead salts. Our present knowledge leads us to believe that the spleen is the organ which is chiefly responsible for the formation of uric acid, and that this acid represents the nitrogenous waste product from the decomposition of nucleins. These bodies therefore must be considered as the mother substance of uric acid as well as of the xanthin bases.

PROPERTIES AND TESTS.

Pure uric acid occurs in the form of a white powder, consisting of transparent rhombic plates. From acid urine or from urine to which acids have been added, it crystallizes in various forms, and is almost invariably colored. The chief form is whet-stone or wedge-shaped, often, however, it is found in the shape of a cross, or as interlaced needles. Barrel-shaped or dumb-bell shaped crystals are also of frequent occurrence. Uric acid is difficultly soluble in water (1-14,000 cold, 1-1,800 hot). In urine it is found chiefly in the form of sodium urate. It is a dibasic acid, and as such forms two classes of salts, neutral urates, which are freely soluble in water, and acid urates which are but sparingly soluble.

In normal urine, uric acid is always found in combination with bases (sodium, potassium, ammonium, etc.), either as an acid or a neutral salt. It is quite insoluble in hot or cold alcohol, and in ether. Glycerin dissolves it sparingly, as do solutions of salts (borax, carbonates, phosphates and acetates of alkalies, lithium salts, etc.). Acid urine upon standing often deposits a sediment of urates, which in consequence of their different degree of solubility nearly always consists of the acid variety. When a strong acid is added to urine containing an excess of soluble (neutral) urates, a fine granular precipitate results, rendering the mixture opaque. The reason for this change is as follows: The acid unites with a part of the base thus causing acid urates to form, which on account of their feeble solubility are precipitated. This change often leads to errors in the application of the nitric acid test for albumin. Uric acid, as such, may be deposited from very acid urine, or from urine which has undergone acid fermentation. It is never safe to assume the presence of excessive amounts of uric acid from the mere fact that a precipitate has formed in the urine upon standing. It is possible that such may be the case, coincident with a positive deficiency in uric acid, as for instance in urine possessing a high degree of acidity. Acid potassium or sodium urate are often found forming a deposit in the urine of rheumatic patients, in febrile conditions, or in any condition in which the quantity of urine is much diminished. Such sediments are usually high-colored (brick dust deposit), from the presence of certain pigments (uroerythrin, etc.). Sometimes they are yellow and in rarer cases nearly white. Under the microscope they are seen to consist of small amorphous granules, arranged in groups. At times they occur in spherical or biscuit form. Such a sediment consisting of acid urates, dissolves upon the application of heat, but upon cooling it again deposits. Acid ammonium urate is found as a deposit in alkaline urine. It is usually yellow in color, and consists of spherical masses, which are often studded with small spicules, hence the name "thorn apple" crystals. This salt is often a component part of various kinds of calculi.

QUALITATIVE DETERMINATION.

1. The sediment or residue is moistened with nitric acid, or chlorine water, or a few crystals of potassium chlorate and several drops of hydrochloric acid may be used, evaporated to dryness in a porcelain capsule, and the residue allowed to cool. It is then held over another dish containing ammonia water, when a purple red color will become apparent (murexid test). Upon addition of solution of sodium or potassium hydrate the color changes to violet. When warmed the color rapidly disappears (difference from xanthin bases). The purple red color is due to the formation of purpurate of ammonium (murexid), and the violet color to the formation of purpurate of sodium or potassium.

2. Solutions containing uric acid, when added to Fehling's solution, which must not be in excess, cause a white precipitate, which consists of a combination of copper suboxide and uric acid, to form. If an excess of Fehling's solution is used, red suboxide of copper forms and the uric acid is partially oxidized into allantoin.

3. Microscopic (see later, under urinary sediments).

QUANTITATIVE DETERMINATION.

If the sample contains albumin this must first be removed (see albumin). In case the sample is very dilute it may be concentrated to about one-half of its original volume, say 400 cc. to 200 cc.

If a sediment of uric acid or urates appears in the sample, it must be brought into solution. This can be done by immersing the container in hot water. After cooling, the required quantity of urine can be measured off. If, as sometimes happens, the uric acid again separates out upon cooling, the sample may be diluted with distilled water. The degree of dilution practiced must of course be taken into account in all subsequent calculations.

1. Method of Heintz-Schwanert.

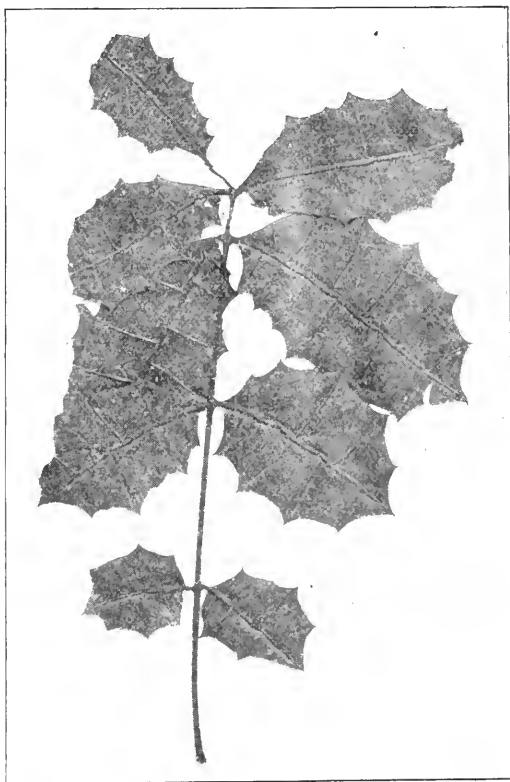
200 cc. of clear urine are placed in a beaker and 5 cc. of hydrochloric acid added. Stir well with a glass rod and set aside in a cool place for 36-48 hours. The crystals of uric acid which by this time have separated out are collected on a previously dried and weighed filter, and washed with cold water (using as little of this as possible), to remove hydrochloric acid. After washing, dry at about 100° C., and weigh. The increase in weight represents uric acid. Uric acid is not entirely insoluble in cold water, therefore a part of it goes into solution during the washing. The filtrate and washings should on this account be collected and for each 100 cc., .0048 gm. may be added to the quantity as obtained above. The quantity thus obtained multiplied by $7\frac{1}{2}$ will give the daily excretion. This method, even when the correction is applied is not a very accurate one, although easily carried out. The results in any case are only approximate. In place of the paper filter (which in each case must be thoroughly dried and preferably weighed in a weighing bottle or well stoppered test tube), a glass wool or asbestos filter may be used. The use of a filter pump, besides hastening filtration, facilitates the subsequent operation of drying.

(To be continued.)

A Poisonous Plant Related to Rhus.

BY PROFESSOR H. H. RUSBY, M.D.

It has been the custom to devote considerable attention to the subject of poisonous plants in connection with the Materia Medica teaching at the New York College of Pharmacy. Not only are the properties and treat-



Comocladia platyphylla Rich.
(Reduced one-third.)

ment discussed in the lecture course, but each student is supplied with specimens of the more common of them, and their identification is explained, in the Pharmacognosy sections. It is peculiarly gratifying to note that this teaching is bearing fruit among the large number of our graduates who have been called to service in the Army and Navy. The case treated by Pharmacist Jorgensen in the following letter is of special interest and importance.

U. S. S. "Yankton," Nip Bay, Cuba,

April 7, 1900.

PROFESSOR H. H. RUSBY,

New York City.

DEAR PROFESSOR RUSBY :

Our ship, the "Yankton," has been on a surveying trip in Cuban waters during the past five months. While in Banos Bay we had several cases of skin poisoning, somewhat like the Ivy poisoning in the States, only more severe. The men came in contact with this poison while building signals through the dense jungle around the bay. After repeated enquiries from the natives, we at last discovered the source of our trouble, and obtained specimens of the plant.

These specimens were shown to the officers and men aboard, and they were cautioned against coming in contact with the plant.

This plant, which the natives hold in awe, is called by them "Guau," and is a shrub averaging about 6 feet in height and densely covered with leaves. The upper surfaces of the leaflets are glossy when fresh, when old they lose this gloss, as you will observe from the enclosed specimen. The plant grows abundantly in the eastern end of the island.

The first stages of the poisoning have all the appearances of the Ivy poisoning, and yield to treatment if taken in hand immediately. Those cases which were treated immediately almost ceased itching after an application of Fl. extr. Grindelia, and in the course of a couple days the swelling disappeared completely.

Those cases which were not attended to immediately would not yield to the treatment of Grindelia, nor to any of the other treatments usually employed in the case of Ivy poisoning.

In the case of our worst patient, both arms were very much inflamed and swollen, and the itching intense, remaining thus until the third day when millions of small vesical eruptions, as large as pin heads, appeared over the entire inflamed surface. These gradually united with one another, so that in a few more days vesicles of the size of a large bean were formed. How much these vesicles would have increased in size, or what the final result would have been I cannot say, as at this stage we deemed it advisable to open up all the vesicles cautiously, preventing the watery discharge from running over other parts, as it was previously observed that wherever this watery discharge touched, new vesicles appeared. A couple of days after the opening of the vesicles, the swelling gradually diminished, and the sores commenced healing by the liberal use of a Carbulated Ichthyol Ointment, the skin peeling off in the meanwhile. A few days after, the arms were again in their normal condition. It was, however, exactly fourteen days from the time the patient appeared for treatment until he was well enough to be discharged to duty.

I thought this matter might interest you, sir, you have traveled so extensively in the tropics.

It certainly does interest me, and I would consider it a great favor if you would let me know if in your travels you ever came across this "Guau" and if there are any specifics used in its treatment.

I would also like to know the botanical name of the plant, its family and other facts of interest concerning it. Thanking you in advance, I beg to remain, dear Professor,

Yours respectfully,

H. C. JORGENSEN, Class of '98.

The leaf forwarded by Mr. Jorgensen was identified as belonging to the *Comocladia platyphylla* Rich. This genus is of the family Anacardiaceæ and is placed by Dr. Engler next to the poisonous genus *Metopium*, with the other poisonous genera *Pseudo-smodingium* and *Rhus* following in order. Nine species of *Comocladia* are recognized, in the West Indies and Central America. The term *Guau* (but spelled "Guao") has been applied to *C. dentata* Jacq. and *C. illicifolia* Swz. The juice of *C. glabra* Spreng. is said to be greatly feared, and that of others is said to be "sehr scharf." I have not been able to find any reference to similar properties in the species sent by Mr. Jorgensen, which is therefore a new contribution. I find that a Dictionary of Cuban and Porto Rican Plants by Professor Manuel Gomez de la Maza, of the University of Havana, the manuscript of which I am editing and translating, for our Department of Agriculture, makes no mention of it. Since the plant does not appear to have been figured, an illustration of the leaf is here presented.

Necrology.

Miss Marie A. Main, of New York City, died July 2. Those of our readers who have attended the American Pharmaceutical Association meetings were acquainted with the deceased. In company with her brother, Mr. Thos. F. Main, Miss Marie has registered at many of the annual conventions during the past dozen or more years. Her real interest in the social features of the association was an evidence of her kind disposition. This, coupled with natural talents and a liberal education, made pronounced by extensive traveling, caused Miss Main to be looked upon as one of the most welcome of the ladies attending the meetings. Mr. Main and other bereaved relatives have the sincere sympathy of all members of the A. Ph. A., who have had the good fortune of meeting Miss Main at the conventions.—*Meyer Bros. Druggist.*

A Menace to Pharmaceutical Education.

Evidences of a human willingness to profit by the supposed wants of drug clerks are becoming very abundant in the advertising pages of drug journals the last year or two. Reference is made to various "institutes," "courses," etc., offering to teach enough about pharmacy to enable the student to "pass the Board" in various lengths of time, say from six weeks to as many months.

To pass the Board! That is all that is necessary! Fill up with quiz compend wisdom; saturate yourself with chemical terms that mean nothing to you; load your memory with chemical formulas that mean still less; memorize, parrot-like, a number of stock definitions; be able to rattle off, without moving an eyelash, the specific gravities, etc., of the official iron preparations; and, behold! you are declared by the head crammer to be able to pass the Board!

To pass the Board! That is all there is, then, of pharmaceutical knowledge. Then a long surcease from care and study. A delightful period of forgetting all this six-weeks' wisdom. Only to pass the Board, in the first place—that is all. But why pass the Board? The law requires it. So, it seems, the mission of these various cramming institutions is not to enlarge their students' knowledge of pharmacy—it is merely to inflate them with a semblance of it, so that when the Board applies its measurements, their dimensions may be just a fraction too large to allow them to be rejected, according to the 67 (or whatever it may be) per cent. requirement.

The evil influence of such practices can hardly be over-rated. Since time immemorial a little learning has been accounted a dangerous thing, and in pharmacy—a calling that has much to do with human life—the rule would seem to apply with special significance. The worst feature about these institutions is not that they teach so little, which, indeed, is a grave enough charge to bring against them, but that they teach that little so badly that it serves no purpose of practical value. To be sure, it may enable the student to pass the Board, if he can get to the examination before his balloon bursts, but after that—what? Simply that he has accumulated an assortment of odds and ends of pharmaceutical lore, stray facts and not-facts, all jumbled together, an endless hodge-podge, which will be forgotten for the most part as soon as it was acquired. Inconsequential, not based on the underlying principles that both explain various phenomena and fix them in the memory, is it any wonder that such "knowledge" is looked on as a dangerous thing?

But how does this constitute a menace to pharmaceutical education? First by creating and nurturing the vicious idea that the only thing a pharmacist need study for is to pass the Board. Instead of encouraging the young pharmacist to study for the purpose of acquiring knowledge

and thereby make himself a competent, trustworthy member of a learned profession, with confidence in himself and pride and joy in his work, he is urged to take a few weeks' course in order that he may pass the Board. He is taught that the Board is an end, whereas it is but an incident, and a trifling one. He is filled with the idea that if once he can pass the Board and practice pharmacy legally, it matters not whether he can do it intelligently. It robs him of the stimulus to further study or, mayhap, his desire to take a college education. This latter, *The New Idea* sincerely believes, should be the coveted ambition of every young drug clerk, and he should allow no obstacle to seem so great to him as to cause him to give it up.

Meantime the mockery of education goes on. Unsuspecting students, not knowing the nature or the gravity of their error, deceived by the specious claims of interested promoters, are led to invest their hard-earned savings in the rankest kind of a counterfeit education, and when their eyes are opened to the character of their green goods, it is too late to get their money back.

The New Idea has no intention whatever of criticising any intelligently prepared and carefully conducted course of home study in pharmacy. These have some value, because while in no way comparable to a course given by even the poorest of pharmaceutical colleges, they are nevertheless better than the haphazard, hit-and-miss methods of studying in the store too much in vogue. One of these cannot in any way adequately replace a college education, but at the same time may profitably preface the course given at any college. But the openly avowed cramming concerns, whose only mission is to make the student pass the Board (and incidentally charge him a good round fee for it), are deserving of the severest condemnation, as their methods are wrong, and constitute a menace not only to pharmaceutical education but to pharmacy itself.—*New Idea*.

"Charity's" Invitation.

President Erb is sending out (through his secretary, Dr. Gies) the following :

DEAR SIR AND FELLOW GRADUATE :

Enclosed invitation is extended to you and your friends with the promise of a good time. Try to be with us and "root" for the Alumni.

Yours fraternally, CHAS. S. ERB, President.

Family Re-union and Outing of Charity Lodge No. 727, F. and A. M., at Donnelly's Pleasure Park, College Point, Wednesday, September 5, 1900. Boats leave East 99th Street Ferry, N. Y., hourly. Games called at 1 p. m. Baseball at 2 p. m., "Charity" vs. "Alumni." Dinner at 6 p. m.

Examination Questions of the Board of Pharmacy of the City of New York, June, 1900.

PHARMACY.

1. State :
 - (a) How many grains there are in one kilogramme.
 - (b) How many kilogrammes there are in three avoirdupois pounds.
2. Convert :
 - (a) 92° F. into °C.
 - (b) 432° C. into °F.
3. How many grains of corrosive sublimate are required to make one gallon of 1-500 solution?
4. Name three official wines, giving official title of each. State what menstruum is employed.
5. How many grammes of diluted alcohol can be prepared from 1,025 grammes of official alcohol.
6. Name all the components of Tinctura Cinchonæ Composita and describe the process of its manufacture.
7. Donovan's Solution :
 - (a) Give its official title.
 - (b) Name its active constituents and state what per cent. of each is present.
8. Citrine Ointment :
 - (a) Give its official title.
 - (b) State how it is prepared.
9. When choral hydrate and lime water are dispensed in the same mixture what new compounds are formed?
10. Name a good solvent for each of the following :

(a) An Oleo-resin,	(c) An Alkaloid,
(b) A Resin,	(d) A Gum.
11. Oleate of Mercury :
 - (a) State how it is prepared.
 - (b) State what changes it undergoes upon standing.
12. Give the official title of three preparations containing ammonia gas, stating the per cent. present in each case.
13. Name two official tinctures which are prepared by maceration. State why they are prepared in this manner.
14. In what official preparation is ethereal oil employed? State how you would determine its absence from this preparation.
15. Give the unabbreviated official title of each of the following :

(a) Brown Mixture,	(c) Arsenic Antidote,
(b) James' Powder,	(d) Lunar Caustic.

CHEMISTRY.

1. Define the following terms :

(a) Per,	(c) Bin,
(b) Triad,	(d) Super.
2. Name the compound which forms when two atoms of iodine combine with one atom of iron, and give its molecular weight.
3. Name an official silver salt which may be fused without undergoing decomposition.
4. How may the following be accomplished?

- (a) The conversion of a ferrous into a ferric salt.
 (b) The conversion of a ferric into a ferrous salt.
5. What is an Amido-acid? How does it differ from an Acid-amide?
6. What is an acid salt? Name two official ones, giving their formula.
7. What happens when a solution of Potassium Permanganate is brought into contact with organic matter?
8. Name two non-metallic elements which readily form salts with the alkalis, and two which readily form compounds with oxygen.
9. When a solution of Potassium Iodide is added to a solution of Mercuric Chloride in excess, what compounds are formed?
10. Give the chemical title of each of the following:
- | | |
|----------------------|----------------------------------|
| (a) KClO_4 | (c) $\text{Mg}_3(\text{PO}_4)_2$ |
| (b) NaHSO_3 | (d) Pb_2O |
11. Write the chemical formula for each of the following:
- | | |
|----------------------|-------------------------|
| (a) Mercurous Oxide, | (c) Cupric Oxide, |
| (b) Ferric Nitrate, | (d) Manganous Chloride. |
12. How would you differentiate between Morphine Sulphate and Quinine Sulphate by chemical means?
13. How many grammes of Sodium Hydrate will be required to make one liter of deci-normal volumetric solution of Sodium Hydrate?
14. Phosphorus:
- | |
|-------------------------------|
| (a) State how it is obtained. |
| (b) Name three solvents. |
| (c) Name three of its acids. |
15. Complete the following equations:
- | | |
|---|---|
| (a) $\text{MnO}_2 + 4\text{HCl} =$ | (c) $\text{BaO} + \text{H}_2\text{O} + 2\text{HCl} =$ |
| (b) $\text{Pb}(\text{C}_2\text{H}_3\text{O}_2)_2 + 2\text{NaI} =$ | (d) $\text{Pb}(\text{C}_2\text{H}_3\text{O}_2)_2 + \text{heat}$ |

TOXICOLOGY AND POSOLOGY.

N. B.—In giving doses, write the name of the drug and give the minimum and maximum doses.

1. Name one narcotic and three corrosive poisons. To which class of poisons does Oxalic Acid belong?
2. Would you use potash, soda or lime in the treatment of Oxalic Acid poisoning? Why?
3. What emergency treatment should be employed for poisoning by Veratrum Viride? By Iodine?
4. In poisoning by Silver Nitrate, what chemical antidote should be given and how does it act?
5. When should artificial respiration be resorted to and how is it performed?
6. Name the antidote for Lead Acetate and state if its action is chemical or physiological?
7. What antidote should be employed for poisoning by the Copper Salts? Does it act chemically or physiologically?
8. What is the proper antidote for poisoning by Corrosive Sublimate? And how should it be given?
9. What emergency treatment should be employed for poisoning by Carbolic Acid? By Tyrotoxinon (in milk, ice cream, etc.)?

10. What symptoms would lead you to suspect Strychnine poisoning! What would you give for Strychnine poisoning?
11. What does the law require the pharmacist to ascertain and do when selling Carbolic Acid, Laudanum, or Strychnine?
12. What is the dose of Aconitine, Antipyrine, Chlorodine, Salicin, Strychnine?
13. What is the dose of Arsenous Acid, Extract of Digitalis, Ferrous Sulphate, Sodium Salicylate, Zinc Valerianate?
14. What is the dose of Corrosive Mercuric Chloride, Fluid Extract of Aconite, Tincture of Colchicum Seed, Tincture of Indian Cannabis, Tincture of Ipecac and Opium?
15. What is the dose of Creosote, Diluted Hydrocyanic Acid, Tincture of Opium, Tincture of Veratrum Viride, Wine of Antimony?

MATERIA MEDICA.

1. What alkaloids are obtained from the following :
 (a) Foxglove, (c) Wormseed, (e) Ipecac.
 (b) Broom, (d) Stramonium,
2. Name three official drugs that are hypnotics, and tell what you know about them
3. Name five drugs containing a fixed oil, five containing a volatile oil. How do volatile oils differ from fixed oils?
4. State the difference between the following :
 (a) Root, (b) Rhizome, (c) Stem, (d) Bulb.
5. Describe Digitalis, Eucalyptus, Henbane, Bloodroot, giving habitat, appearance and medicinal properties of each.
6. Name two official drugs that belong to the Natural Order Cucurbitaceæ.
7. Give the botanical name and habitat of the following :
 (a) Senega, (c) Blue Flag, (e) Corn Silk.
 (b) Culver's Root, (d) Black Snakeroot,
8. Colocynth : Give common name, habitat, part of plant used and official preparations.
9. To what natural order do the following belong :
 (a) Wild Cherry, (b) Aloes, (c) Wormwood.
10. From what are the following obtained :
 (a) Acetanilid, (c) Salicine,
 (b) Bromine, (d) Pyrogallol.
11. Give the official titles of five vegetable drugs that are astringent. Three that are demulcent.
12. Xanthoxylum : Give common name, part of plant used, habitat, and official preparations.
13. To what classes do the following drugs belong : Turpentine, Gamboge, Tolu, Acacia, Copaiba, Asafetida, Catechu.
14. Name the official salts of Zinc. Give the official title of each in full, not abbreviated.
15. Give the common names of the following :
 Rhus Toxicodendron, Dulcamara,
 Pix Liquida, Cypripedium,
 Menispermum, Chimaphila.

**Examination Questions of the Board of Pharmacy of the City of
New York. (Continued.)**

PHARMACY.

1. Give the unabbreviated official title of each of the following :

(a) Lugol's Solution.	(c) Tartarated Antimony.
(b) Griffith's Mixture.	(d) Monsell's Solution.
2. Give the percentage strength of each of the following :

(a) Vinum Antimonii	(d) Glycerin.
(b) Alcohol.	(e) Liquor Sodii Arsenatis.
(c) Extractum Opii.	(f) Acidum Sulphuricum.
3. Name an official medicated water which contains a poisonous acid. Why does the strength of this in the finished preparation vary?
4. State how an infusion whose strength is not directed by the physician should be prepared. Name the official infusions.
5. How many grammes of Extract of Nux Vomica will be required to prepare 1000 cc. of Tincture of Nux Vomica? How many grammes of total alkaloids are contained in 100 cc. of this tincture?
6. Opium Deodoratum :
 - (a) State how it is prepared.
 - (b) State what per-cent of Morphin it should contain.
 - (c) State how it differs from powdered opium.
7. Write a working formula for 4 fluid ounces of a 25% emulsion of Oil of Turpentine. State what materials you employed and what quantities.
8. How is Resin of Podophyllum prepared? What purpose does the Hydrochloric Acid which is used in its manufacture, serve?
9. A pharmacist has 4 lots of powdered opium containing respectively 10, 12, 16 and 18% of morphine. From these he wishes to obtain one kilogramme of a product which will contain 14% of morphine. How many grammes of each kind must he employ?
10. Ferri Sulphas Exsiccatus :
 - (a) State how it is prepared.
 - (b) State why it should be kept in a dry, well-stoppered bottle.
 - (c) Name its official preparation.
11. Give the official title of Blue Mass and name all of its constituents.
12. How are Tinctures of Fresh Herbs prepared? State whether or not they are potent preparations. Give reasons for your opinion.
13. How does Pearson's Solution differ from Liquor Sodii Arsenatis?
14. Pancreatinum :

From what source is it obtained?

For what purpose is it used?
15. Is there any difference in the chemical composition and activity of commercial Digitalins? If so explain the causes.

CHEMISTRY.

1. What colors do salts of the following metals impart to a Bunsen flame?

(a) Calcium.	(c) Barium.
(b) Potassium.	(d) Lithium.

2. Hydrogen :
 - (a) State how it may be prepared from water.
 - (b) State in what condition it is most active.
3. How many grammes of Sulphur dioxide can be obtained from one kilogramme of Sulphur, the Sulphur being 90% pure?
4. Show by equation how Potassium Chlorate can be obtained from Potassium Hydrate.
5. Give a characteristic test for each of the following :

(a) Antimony.	(c) Phenol.
(b) Nitrous Acid.	(d) Salicylic Acid.
6. Give a chemical title of each of the following :

(a) $\text{KC}_2\text{H}_3\text{O}_2$.	(c) $\text{K}_4\text{Fe}(\text{Cy})_6$.
(b) $\text{Pb}(\text{NO}_3)_2$.	(d) NaH_2PO_4 .
7. Write the chemical formula for each of the following :

(a) Glauber's Salt.	(c) Green Vitriol.
(b) Ethyl Nitrite.	(d) Glyceryl Trinitrate.
8. Name the poisonous impurity which is sometimes present in salts of Bismuth. How would you detect the same?
9. Give tests by means of which you would show the presence of Sodium and Ammonium in the same mixture.
10. What kind of salt is Turpeth's Mineral. Define this kind of a salt.
11. How would you determine the presence of Sulphur in an Organic body?
12. Write the chemical formula of Formaldehyde. State how it is prepared.
13. Into what two series are Organic Compounds divided. Give two examples under each series.
14. Chloroform :
 - (a) State how it is prepared.
 - (b) What impurities may it contain?
 - (c) How is it purified?
15. Complete the following equations :

(a) $\text{BiCl}_3 + \text{H}_2\text{O} =$	(c) $\text{C}_6\text{H}_5\text{OH} + \text{HNO}_3 =$
(b) $\text{SbCl}_3 + 3\text{H} =$	(d) $\text{Hg}_2\text{Cl}_2 + 2\text{NH}_4\text{OH} =$

MATERIA MEDICA.

1. Describe *a*. Iodine, *b*. Mercury, *c*. Sulphur, *d*. Antimony. How are they obtained?
2. What is Phenol? From what is it derived?
3. To what natural orders do the following drugs belong: *a*. Hemlock, *b*. Colchicum Root, *c*. Hops.
4. Give the botanical name and habitat of the following: *a*. Sarsaparilla, *b*. Stillingia, *c*. Henbane.
5. Name three drugs belonging to the Natural Order Rutaceae.
6. From what are the following obtained: *a*. Gallic Acid, *b*. Iodoform, *c*. Manganese, *d*. Menthol.
7. Name two official drugs belonging to the following classes and give their official titles: *a*. Gum Resins, *b*. Glucosides, *c*. Alkaloids, *d*. fruit.
8. Podophyllum. Give common name, habitat, part of plant used. Name its active principle and official preparations.

9. Name two official drugs belonging to each of the following classes: *a.* Alteratives, *b.* Diuretics, *c.* Antiseptics, *d.* Astringents.

10. What is a Balsam? Name two official drugs that are Balsams. How do balsams differ from resins?

11. Give the official titles of: *a.* Three Volatile Oils, *b.* Three Fixed Oils, *c.* Three Oleoresins.

12. State the composition of the following: *a.* Dover's Powder, *b.* Tully's Powder, *c.* Compound Jalap Powder, *d.* Aromatic Powder.

13. What is *Viburnum Prunifolium*? What part of the plant is official? Name the official preparations.

14. Define: *a.* Botany, *b.* Materia Medica, *c.* Natural Order, *d.* Habitat, *e.* Indigenous.

15. Give the Latin title of the following:

Gray Powder,	Queen's Root,
Turpeth Mineral,	Arbor Vitae,
Kermes Mineral.	Bitter Apple.

TOXICOLOGY AND POSOLOGY.

N. B.—In giving doses, write the name of the drug and give the minimum and maximum doses.

1. State the best antidote for each of the following: Oil of Vitriol, Phenol, Paris Green, Salts of Lemon.

2. What antidotes are as a rule appropriate for the mineral acids? For the caustic alkalies?

3. For what poisons is Epsom Salt a suitable antidote? How is it used?

4. In poisoning by an unknown substance, what emergency treatment should be employed? Why?

5. What emergency treatment should be employed for poisoning by Atropine? By coal gas?

6. What emergency treatment should be employed for poisoning by Antipyrine? By Cocaine?

7. Name a common narcotic and a common corrosive poison; state the maximum safe dose and the emergency treatment for poisonous dose of each.

8. Give a characteristic chemical test for the identification of Arsenic. Of Morphine.

9. What precautions should the pharmacist observe in selling poisons and what poisons should be register in the Poison Book?

10. State the emetic dose of each of the following: Cupric Sulphate, Mustard, Syrup of Ipecac, Zinc Sulphate.

11. What is the dose of Aconitine, Ammonium Carbonate, Mercuric Chloride, Monobromated Camphor, Morphine Sulphate?

12. What is the dose of Antimonial Powder, Chloral, Lithium Bromide, Potassium Iodide, Sulphonal?

13. What is the dose of Citrated Caffeine, Gallic Acid, Paraldehyde, Red Mercuric Iodide, Infusion of Digitalis?

14. What is the dose of Extract of Hyoscyamus, Extract of Nux Vomica, Fluid Extract of Belladonna, Fluid Extract of Ergot, Fluid Extract of Veratrum Viride?

15. What is the dose of Compound Spirit of Ether, Spirit of Chloroform, Tincture of Colchicum Seed, Tincture of Gelsemium, Vinegar of Squill?

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Original Contributions, Exchanges, Books for Review and Editorial Communications:
Address HARRY B. FERGUSON, PHAR.D., 115 West 68th Street, New York City.

EDITED BY HARRY B. FERGUSON, PHAR.D.,

WITH THE COLLABORATION OF

CHAS. RICE, PH.D. H. H. RUSBY, M.D. V. COBLENTZ, PH.D. GEO. A. FERGUSON, PH.B.
GEO. C. DIEKMAN, M.D. JOHN OEHLER, PH.G. SMITH ELY JELLIFFE, M.D., PH.D.

"A Good Thing."

At last, after years of good hard work on the part of the Alumni Association and with the assistance of the many friends we have made, the Pre-requisite Clause has been adopted by the N. Y. S. P. A. and by doing so the wisdom of the members was shown by their vote, which was unanimous for the measure.

True, it is not to take effect until 1905 but that will surely suit us, so long as we have the assurance that it will be enacted.

This action proves conclusively what concerted action on the part of the Alumni of the College will have as its result.

Conceived in the minds of a few graduates way back in the eighties it took material shape at the Manhattan Beach meeting in 1897 where it was tabled in short order; at the Albany meeting it was lost by a few votes, and this year at Newburgh it went through without a hitch.

Much credit is due to our many friends who, while they are themselves non-graduates, nevertheless saw the justice and expediency of the measure. President Muensch is to be congratulated in having come out flat-footed in its favor when making his annual report.

Our brother collegians are also to be thanked for their allegiance to the cause and for their stand in the matter.

For all this we are thankful and again we say "stick by your Association boys and bring your wrongs to its meetings so that they can be righted, if such be possible."

Notes from Newburgh.

The citizens were very obliging and courteous, and the local committee had mapped out a splendid program.

All the notorieties were there, too numerous to mention.

The roof garden (without a garden) was the place to be o'nights—ocean breezes direct from the Hudson.

Many of us were "boarded out" as the Hotel was filled, but none complained of the treatment received, except a few who were treated to a "cinder bath" at the United States, and when they paid their bill found they had to pay for it.

Some of them said they could stop the West Shore trains by simply putting their arms out of the windows.

Nobody dared get loaded down town as it was too much trouble to carry it (the load) up the hill.

Shade trees are abundant in Newburgh and they are needed too.

They have a beautiful Masonic Hall, Club House, Post Office and other public buildings there.

The bowling contest was held at the club house, and it is said after "Schnacke" had spent all his money he won a cash register to ring it up in.

The Alumni was well represented, all the leading lights were there including Griffin. The College and Faculty was there "very muchly." The German apothecaries came up with pond lilies in their button holes and were dubbed "The Pond Lily Brigade."

The wholesalers were all in good shape, so was the Press, the latter was very busy.

Our friends from up the State were all with us in everything, or possibly we were with them.

Hirseman is the new President and Searles was re-elected to the executive committee.

We all wanted more Toddy so Todd was unanimously re-elected Secretary. Hooray for Todd, w're with you.

Geo. Gregorius made *the* speech of the session when he merely said, "Gentlemen I thank you."

Richardson did the elegant when he refused to run against Todd.

Smither thinks the prerequisite clause will never die and he's right too;—he suggested that all reports have as a final item the prerequisite clause, and they did.

Whom was the joke on, Dickman or Holmes, in making a report on the A. Ph. A.?

Did anybody find Gies' knife at the Knife Factory?

Jersey snubbed New York, but New York treated Jersey white.

The boat ride to West Point was fine except that some one got wet.

Alumni, College and Class Notes.

CONTRIBUTORS.

Alumni Association,	WM. A. HOBURG, Jr., Ph.G., 115 West 68th St., N. Y.
Alumni Notes, Socials, etc., and Classes prior to 1893, . . .	CHAS. S. ERB, 121 Amsterdam Ave., N. Y.
Bibliography,	ADOLPH HENNING, Ph.G., 68 William St., N. Y.
Class '93,	EUGENE F. LOHR, Ph.G., 508 Marcy Ave., Brooklyn, N. Y.
Class '94,	FRANK N. POND, 226 Ninth Ave., N. Y.
Class '95,	GEO. J. DURR, Ph.G., Randalls Island, N. Y.
Class '96,	CHAS. G. H. GERKEN, Phar.D., 169 S. 4th St., Brooklyn, N. Y.
Class '97,	E. A. MEINECKE, Ph.G., 14 Platt St., N. Y.
Class '98,	T. B. FURNIVAL, Ph.G., 115 West 68th St., N. Y.
Class '99,	THEODORE E. MEYERS, Dorrancton, Pa.
Class 1900,	ROBERT B. LIVINGSTON, 115 West 68th St., N. Y.
Class 1901,	ABERT C. THOMPSON, 115 West 68th St., N. Y.
Post Grad. 1900	FANNY A. BLAN, Phar.D., 115 West 68th St., N. Y.
Legal Notes,	H. A. HEROLD, Ph.G., 108 Fulton St., N. Y.

Classes Prior to '93.

Miss K. Regan, sister of Joseph A. Regan, deceased, who was a Junior student at the College of Pharmacy of the City of New York, during 1886-1887,—desires very much to get a copy of his picture, which he had taken with the Junior Class of that year. Any member of the class of '88 who can aid Miss Regan in securing the same, kindly communicate with her, at 352 De Graw Ave., Brooklyn, N. Y.

'93 Notes.

Dr. Loughnan is now with Pond and Bowes. A big jump from Greenport to Ninth Ave.

Johanssen has left Wanier & Imgard and is now with Neergard. This is his first change since College days. We were always under the impression that he had taken root and grown fast, for nothing seemed to budge him from the old spot.

Schlichter, Ph.G., M.D., etc., has built up a large practice in Elizabeth. All those Jersey boys are plump and prosperous.

Mrs. Zwingli is continuing the business left by her late husband at Saranac Lake. She is doing well, and we wish to again assure her, of the good wishes of the class for her good health and prosperity.

Dr. Otto Frischbier, rosy and cherubic as ever drifts our way occasionally. He is going to blossom out with a new horse and rig. He'll be sure to pass everything on the road (going the opposite way).

Dr. O'Hydemann is raising chickens and radishes in Hicksville, but not much of a grave-yard. You can't kill them with an ax out there.

Those of you who are away, drop an occasional tear for we poor sinners, working for our daily bread, with an occasional dab of butter.

Ihmels is still faithful to the town of rubber plants and churches.

Hoburg has again opened his season at Long Branch, whither we shall hie us in search of him, very soon.

Sasse is certainly a prosperous looking apotheker these beautiful days.

If you have any news either of yourself or of others of the class, send it in, as now comes the season when our cerebation is weak in the limbs.

EUGENE F. LOHR.

'95 Notes.

It is indeed, a pleasure, that I am enabled to inform you that during that awful calamity, the Hoboken Fire disaster, several of our classmates, who desire their names withheld, rendered valuable assistance to some of the injured, by a liberal use of caron oil and bandages.

It is with extreme regret that I inform you of some very sad news. On Friday evening, July 13th, Louis I. Cherry and his wife were out buggy riding, when suddenly the horse became frightened and ran away. Mrs. Cherry tried to jump from the carriage when her skirt caught on the step, and she fell and was dragged for a distance of three blocks, when the skirt gave way and left her unconscious in the street. An ambulance was called from St. Vincents' Hospital, where she was taken and in spite of all efforts to bring her to, she died one-half hour later, with her husband, our classmate, by her side, who was thrown from the carriage unhurt.

Beyond question, and with extreme regret, I have not a doubt, that the Alumni Association extends its deepest sympathy, in connection with class of '95 to our bereaved classmate Louis I. Cherry.

'97 Notes.

In Memoriam.

It is with extreme regret that we announce the death of one of our fellow graduates, William White, class of '97 ("Bruder White" his friends and classmates used to call him), who died at the home of his father, Dr. White, of Whitons, Wycomico Co., Maryland, April 1, 1900, in the 28th year of his age, the cause of his death being bronchial trouble. He had been in the employ of W. B. Riker Sons Co., New York City, until shortly before his death.

Always bright and witty, he was loved and respected by all who knew him. and particularly so by his classmates, who undoubtedly join with the Alumni Association in extending to his relatives their heartfelt sympathy for his untimely demise.

R. G.

Oscar Wirth, who has been with H. Ohnstein, Lexington & 79th, City, for some time is going to the Catskills for a few weeks with his wife.

Our "Beau Brummel Geenen is engaged I am told" and expects to spend a few weeks at Asbury Park with his fiancée.

Shears is working his H₂O throughout the country; now he even offers to supply our troops in China. Shears certainly is enterprising.

Little Willy Van Gilder can be seen nightly on the old Rialto. It seems he can't keep away.

Our Charley Underhill expects to take his vacation again this winter, so that he can go snow shoeing up in Canada for he is a great enthusiast in that sport.

"Pills" Taussig of fatty acid fame will, a soldier be. I am told this time its China.

H. Conrad, who is with A. P. Murken, at 169 S. 4th, Brooklyn, is the proud father of a little Herbert.

I met "Eddy Steniecke" some time past in Brooklyn. He had his usual *gait on*, so it was hard work to stop him, all I could learn was that Coney Island is where he is summering, and he claims no place like it.

It is our pleasant privilege to write in this column that George W. Hague, '98, was married on July 4, 1900, to Miss Agnes A. Seaman of Freeport, L. I., the wedding was a brilliant affair, and Dr. F. W. Brown, '98, and Miss J. A. L. Rilke had the honor of being best man and bridesmaid. After the ceremony Mr. and Mrs. Hague started on an extended tour through New York state and surrounding country. The hearty congratulations of the class of '98 in particular, and the Alumni Association in general, are therefore extended to the happy couple, together with best wishes for their future health and prosperity.

'99 Notes.

Liebstadter who until recently Apothecary in the New York Hospital is also in Paris by this time. Just received a card from him which was very short and to the point Michel is with Fresse's, 38th Street and 3d Avenue.

Roux (Rue, Rue how I love my Rue) is still at Hasselbach's, 119th Street and 1st Avenue.

Miss Ehlin is New York Representative of the Nutrico Milk Food Company.

Pompelly when last seen was with Caswell, Massey & Co., 25th Street. Wm C. was with them at New Port last summer.

Our President Eugene J. Ward, has left Perry's (in the World Building) and is now with Eimer & Amend.

Otto N. Frankfurter is also with Eimer & Amend, and has been there since last December.

Fred. S. Frankfurter has left Wolf's & Co., and is now head clerk at the Palisade Pharmacy, 42d Street and 10th Avenue.

Yes Pointner, Roux, Lohr, Rolfs, Merring, Mohr, and a score of others were at the commencement and that is the last I've heard of them.

Rushansky is working down at Rockaway Beach this summer. Doesn't like Roosevelt Hospital in the summer time.

Rolfs is with Geister on Columbus Avenue.

Shoenherr has left the Red Cross Pharmacy 34th St. & 8th Ave., and is now with Wall, 9th Ave. & 38th St.

Someone asks where Cadman is—Don't know, ask some one else.

Saw Purdy & Tyler on 3rd Ave., the other day but they didn't see me.

Chas. Heller was married on the 27th of June.—That's news.

Raabe is at 68th St. & Amsterdam Ave.

Otto N. Frankfurter intends to spend his vacation in Patchogue, L. I. Probably the first two weeks in August, so I'm told.

Berndt is still in Brooklyn. He must have a steady job.

So long boys I hope you'll have a pleasant vacation.

MEYERS.

'00 Notes.

Reuben T. Groves has accepted a position with the Mutual Drug Co., 422 3rd Ave., N. Y.

Retrospectatus.

(To be perused by certain members of the 'Class of 1900 some twenty years from now, if they are alive.)

The toil and heat of day are o'er,
The winds are gently sighing,
And through the stillness of the air,
Scenes long past are flying.

They seem to come, they seem to go,
In swift allusions gliding,
Fond romances of other days,
For which my heart keeps sighing.

I see again the dear old boys,
And walk the same old places;
Which often in those other days,
Were bright with knowing faces.

I hear again the merry laugh,
And see the groups yet standing;
Down in the hall each morning hour
With laugh and voice expanding.
Again the scene at lecture laid,
And all so intently viewing;
While "Prof." with smiles and timely
words
Our heads are gently cramming.
Each one with pencil and with book
All learning neatly noting,
While gently on our passive minds
Some "Airy Castles" floating.

Firm on his seat old "Langhein" sits,
His face with laughs aglowing,
And squints and squims and tries to show
He knows all that's worth knowing.

While "Jorge," "Morse" and "Deck,"
Side by side are seated,
All knowledge, wit and passing quibs
With silence cute are greeted.

"Reynolds" from Dewey land,
With face heavenward lifted,
Shows to all who knows him well
To be like "Foster" gilded.

And "Good Ale" from old Dover town
Down near the front is seated,
Intently on the bell is bent
Its sound with joy is greeted.

While "Dahlberg"—"Martin" near him
sits,
With locks so brightly glowing
With sense and earnestness intent
The seeds of knowledge sowing.

Again pass on to the quiz room
Where all is still and quiet,
Where each and every one of us
In turn receives his dict.

How ready is fair "Charlie Lotz"
To answer questions knowing,
While over in the corner seat
"Endress" sits a crowing.

Dear "Winne" with his face serene
And "Regen" sweetly smiling;
Oft with the midnight oil
In study profound pursuing.

"Colcord" with his eyes of four
Is always ever ready,
And "Groves" with his quick response
Shows the aptness to his study.

"Kaehrle" with his sportiveness
His mind not bent to learning,
But rather through his logger-head
The football is a roaming.

"McClearn," from the Pine Tree State,
His countenance ever glowing,
With action, eye and smiles,
Winks wickedly and knowing.

"Lukin" with his wooden ear,
In his mouth the marble rolling,
Tries, with expostulation and fear,
To jumble up his English.

"Green" and "Wilson" from Scranton
town,
The land beyond the Jerseys,
Sit side by side, a motley pair
On beer and crackers musing.

And noisy "Pfaffe" and "Wilmer Hill"
From Breezy Coney Island;
Break forth into æsthetics,
When the hour bell releases.

And in the labs, with might and main,
Each one his toil progresses;
And to the "Profs" with simple grace,
His ignorance confesses.

"Helmecke" from beyond the Bronx,
And "Frey" from Orange Valley,
Vie with "Hepburn" and "Snouder"
The unknown to analyze.

While in the rear with sweet repose,
Times Seconds gently sifting,
Sits "Britton" on life's swelling wave,
So calmly, calmly drifting.

Alas and still a-lack-a-day,
All these scenes are dimming,
And I from deep repose awake,
To find that I've been dreaming.

ROBT. B. LIVINGSTON,
Of Class of 1900.

'01 Notes.

I called to see some of the boys not long since. They all seem to enjoy themselves this warm weather.

J. H. De Georgi is at Long Branch. He is at present very busy entertaining a friend from Utica.

Fred Derscheidt and Billy Hübner are "wilting their collars" at the College getting the apparatus ready for the coming course.

Jordan and Racoosin called on me the other day and later Jordan and I ran across Walsh. They are all doing well and having a good time.

It is with deep regret that I write of our friend Bull's misfortune, as most of you know had to leave College on account of his health. Since he left he has successfully undergone two operations for cancer. Bull was very popular among his classmates and will be missed by us in the coming year.

KΨ

Harry Reynolds is spending the summer at Newport, R. I., with Caswell Massy & Co. Jorgenson, Wilson, Hepturn, Pfaff and a few others, expect to take the Post Graduate course. We can't loose them after all.

Lost, strayed or stolen, Ed. J. Banzhoff. Last seen April 14, 1900. Any information regarding his whereabouts will be thankfully received by his friends and brothers of the KΨ.

Whilst strolling around "for my health," one Sunday not long ago, I dropped in the store of Martin Arnemann, 38th St. and 8th Ave., to have a little chat with Brother Freese; while there who should appear but Wilson with our brother Goodale, of Dover (N. J.). Jame, you ought to see him, he's as fat as Dr. Geis. He says over in Dover they go to work at 7:30 A. M. and close at 8:30 P. M., and he is kicking about long hours; he has a cinch and don't know it. We attempted to call on Molwitz at 31st and 8th Ave., but it happened to be his Sunday off so we missed him. We stopped to see Foster who, although not one of us, we look to as a true friend of the KΨ. He complains of having a good job and a good boss; bad complaint isn't it?

Pfaff called to see me at the store not long since. He is looking O. K.

I talked with H. P. Hill over the 'phone one day last week. He wished to be remembered to the crowd.

Beebe has severed his connection with J. H. Morrey, 104th St. and Boulevard, and returned to his home in Vermont.

"Louis Be D——" (name given to L. B. Decker by our New Haven friend, M. A. K.) is in a drug store at Cairo, N. Y., as manager. It's a good position and it requires a good man to hold it. Deck holds it all right.

Yours in KΨ.

A. C. THOMPSON.

Kay's Kurious Kolumn.

Who says we cannot select good outing days? June never presented a nicer day and how the crowd did take advantage of it, the Bowling, Base Ball and Foot Ball fiends haven't got over it yet, and you ought to see Diecks.

Miss Owens again captured the Ladies 100-yard dash. Next year we will have to handicap her.

The crowd wasn't satisfied until Dr. Blann came into the picture. By the way pictures may now be had from Vugent, 454 3d ave., New York. They are handsomely mounted and cost but 60 cents.

The R. D. B. A.'s took entire charge of the Bowling, and how they did hustle. They are built of great material, as "Schnacke" learned during the prize contest.

In the absence of the Grube Bros., Count De Zellar was kind enough to officiate at the Rifle Range. He won the claret and we haven't seen him since. The presentation of the "Merrell Cup" was the hit of the day. Messrs. Jeffries and Mandelbaum are to be congratulated on their good taste. Here's hoping '94 wins it next year.

Dr. Diekman and Mr. Bigelow have been elected members of the new Board of Pharmacy. You should have seen the bunch of Ph.G's that came up to College to do it.

The
Journal of Pharmacology

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COLLEGE OF PHARMACY OF THE CITY OF NEW YORK

CONTENTS

The Metric System	179
RUFUS P. WILLIAMS	
Fatal Poisoning by Oil of Wintergreen	187
Book Review	187
The New German Pharmacopœia	188
Animal Wools and Hairs.	189
SMITH ELY JELLIFFE, M.D., PH.D.	
ERNESTINE MOLWITZ, PHAR.D.	
What is Life?	194
Court Definition of "Drug Store"	195
New Pharmacy Law (Notice)	196
Class Notes, etc.	197-200



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AUGUST, 1900.

No. 8.

The Metric System.*

BY RUFUS P. WILLIAMS.

President of the New England Association of Chemistry Teachers.

The Metric System is a decimal system. The entire civilized world uses the decimal system of NOTATION, and the fact that our arithmetic is founded on the scale of ten is the main reason why our money, and our weights and measures should also be reckoned on that scale. If our notation were DUODECIMAL, then it would be ADVANTAGEOUS (and as time goes on and calculations become more complicated), IMPERATIVE, that money, lineal dimensions, volumes, weights, time units and all other measurements should be expressed in the same duodecimal scale.

The advantages of a duodecimal system over the decimal are usually recognized among mathematicians, if for no other reason because 12 can be divided by 2, 3, 4 and 6, whereas 10 is divisible by only 2 and 5. We are told that if our ancestors had had 12 fingers instead of 10, our system of notation would have been duodecimal. But the decimal scale of numbers is so strongly fixed on civilization that it will probably never be displaced. Once let a people adopt its ARITHMETIC SCALE, and fix its radix, and every computation by arithmetic will eventually be forced into that scale. And so the man who introduced the decimal notation into Europe from Arabia, in the twelfth century, made it impossible for any system of money, or of weights and measures other than the decimal to subserve the best interests of mankind. This statement seems too nearly axiomatic to

* A paper read at a meeting of the American Chemical Society, June, 1900.

Issued in pamphlet form by The Decimal Association, Botolph House, Eastcheap, London, E. C.—[ED.]

need elucidation, and yet the strongest objection ever raised against the use of the Metric System—and it even now occasionally rears its head—is that duodecimal measures are better than decimal. There is no question that with a DUODECIMAL NOTATION—the superiority of which in some respects is granted—any measurement scale should also be duodecimal, but there is not harmony with decimal notation and duodecimal measures. Measurements and their computation must go hand in hand, or, briefly put, LIKE NOTATION SCALE, LIKE MEASURE SCALE.

The origin of this notation is lost in antiquity, and has not been definitely traced further back than the seventh century of our era, it being known to have been used in India in 669 A. D., though probably much older than this. It was introduced in Europe during the twelfth or early thirteenth century, and by the END of the thirteenth century all scholars had become acquainted with it. The decimal point did not come into general use till the beginning of the eighteenth century, four hundred years later.

Leaving the middle ages and arithmetic, we proceed to speak briefly of the history of Metric Weights and Measures. In the light of subsequent events it seems singular that the United States should have been the first country in the world to make a scale for its money to correspond with its arithmetic, and should be one of the last to swing into line its other standards of measurement. But such is the fact. In 1786 our decimal system of money was adopted.

From time to time attempts were made to have Congress adopt a decimal system of measurements. In 1817, John Quincy Adams, then Secretary of State, was requested by the Senate to report on the Metric System. His voluminous Report—some 235 pages, including appendices—was submitted four years later. He strongly favored the ultimate use of the so-called French system, but thought it unwise to adopt it at that time.

France was the first nation to adopt such a system, which at the time of Adams's Report had been in operation there for a quarter of a century. In 1790 Prince de Talleyrand proposed to the Constituent Assembly of France that the many systems in use in that country be changed into one system, and that that be a decimal one, founded on the pendulum. This was adopted by the Assembly, and sanctioned by Louis XVI. It was proposed that the French Academy and the Royal Society of Great Britain appoint a joint Commission. England declined, but Spain, Italy, the Netherlands, Denmark and Switzerland were finally represented in the proceedings of the Academy.

Three plans for a lineal standard were proposed by the Commission—which consisted of the ablest living mathematicians—(1) a pendulum beating seconds; (2) a quadrant of the equator; (3) a quadrant of the meridian. The last was selected, and it was decided that the ten-millionth part of this

quadrant should be the unit—a meter. Multiples and divisors of this, and volumes and weights dependent upon it were provided for. The SYSTEM was provisionally established by law, August 1, 1793, the NOMENCLATURE nearly two years later, April 7, 1795. For seven years the survey of the meridian went on, and in 1799 representatives from ten countries assembled in France to settle the details from the result of the survey, and fix a “definitive meter.” The Metric System thus went into operation in France. But the example was not quickly followed by other states. About twenty years later the Netherlands appears to have been the first to adopt it. In 1869, an International Commission of Weights and Measures, consisting of representatives of nineteen leading nations, reported in its favor, and many adopted it. One after another, different countries have joined in, until practically all the States of Europe, except Russia and England, use the system, either exclusively or very generally. The same can be said of the States of South America, of our new West India possessions, of Mexico and the States of Central America, as well as parts of Asia and Africa. Germany in 1870 enacted a compulsory law to go into effect in two years. Before the expiration of the two years everybody was using the system.

In England an Act passed in 1864 allowed the use of the meter and its companions if any persons choose to use them. In 1868 there was almost enacted a compulsory Metric System measure, the Bill having passed the second reading in the House of Commons, which usually means adoption, but it was suddenly withdrawn. In 1878 Parliament passed an Act forbidding the use of any weights or measures not the Board of Trade standards, thus *illegalizing* the Metric System. This continued till 1897 when another Act was passed which re-established permissive use. The British Pharmacopœia, published in 1899, gives the metric weights after the Imperial, and in the next revision will give the metric first. The Educational Department in Great Britain has recently made the teaching of the metric system compulsory in the elementary schools. In 1895, a Committee of Parliament, after an exhaustive Report, recommended its exclusive use. Pres. MENDENHALL recently stated that the Metric System had in five years made more progress in England than in thirty years in the United States.

Russia has lately issued a permissive law similar in purport to that of England and the United States. It went into effect January 1, 1900, of their era.

The Russian Ukase of 1894 directs that after a certain date the system shall be used by all druggists in the Empire. It has been used in the medical department of the Russian army since 1896. A bill is in preparation by the Minister of Finance of that country for its compulsory use throughout the Russian Empire in every department of trade. The bill

has received the approbation of the State Council, and soon we expect this vast empire of over 100,000,000 people to use the international system exclusively, for in that country it takes but a short time for a "bill" to become "law." Then there will be left only the United States and Great Britain, with her possessions using an antiquated time-wasting system.

In our own country, one of the many interesting attempts at a Decimal Scale was made in 1857 by a joint special committee of the Chamber of Commerce of New York and the American Geographical and Statistical Society. After denouncing the French system as being atheistic in its origin, and as requiring a knowledge of Latin and Greek and the acquisition of a "noisy vocabulary," this committee proposed to have Congress adopt a Decimal System with English names. These names were never written in Uncle Sam's Statute Books. The first legislation by Congress was July 28, 1866, an Act which legalized Metric Weights and Measures, but did not make their use compulsory. It is the only important Act ever passed on the subject by the national legislative body. Thus the three conservative countries—Russia, England, and United States—are believers in the international system to the extent of allowing its use, if their citizens elect to use it, and the tendency in the two former countries is rapidly towards its exclusive use. In 36 nations the Metric System is now the standard. In three, its use is permissive, in no civilized country is it prohibited, and in every one there is some enactment regarding the system. Every decade its use more nearly approaches the exclusive, and no instance is recorded of a nation's going back to the old system after once adopting the new. According to the report of the DECIMAL ASSOCIATION of England, 1898, there are 448,000,000 people who use the system with at least theoretical exclusiveness.

Though our Congress has never passed any measure on the subject more radical than the permissive Act of 1866, bills have been reported for several years by the Committee on Coinage, Weights and Measures, who have used the most cogent arguments in favor of passing a law requiring Government use of the system in all its transactions with the people, such as in custom houses, but Congress has not yet complied. Two such bills were reported at the last Session of Congress, and are now in Committee. They are almost identical, except as to the date assigned for adoption of the system. One of these will be reported at the next Session of Congress, with possible change of dates, and the members of the Committee express hope of its passage at that time. The first one, H. R. 104, introduced by Rep. Littauer, December 4, 1899, is as follows: "Be it enacted, etc. That from and after the 1st of July, 1902, all the Departments of the Government of the United States, in the transaction of all business requiring the use of weights and measurement, except in completing the survey of public lands, shall employ and use only the weights and measures of the

Metric System ; and from the said 1st day of July, 1902, the Metric System of weights and measures shall be the legal standard of weights and measures recognized in the United States." The main feature of these bills is compulsory use by the Government, which it is thought will result in accelerated voluntary use by the people. For years the various heads of departments have expressed themselves in favor of such a law.

It seems desirable to examine briefly the results at the present time to ascertain whether permissive legislation alone—as shown by a 34 years' experiment—is sufficient, or whether we need a compulsory law. A brief statement will be made of the chief industries in which the Metric System has been employed and the extent of its use, so far as it has been possible to ascertain.

It is impossible to state to what extent the system is taught in GRAMMAR SCHOOLS side by side with "compound numbers." In science teaching—particularly in physics and chemistry, as taught in high schools, academies and colleges, medical and technological schools—the new system has wholly supplanted the old. Our college text-books of physics and chemistry first adopted the Metric System for their experimental work during the years from 1860–1870. High School texts followed, though nearly 20 years later, the first one to make the change being in 1878. Not a single text-book of any scope in these subjects now uses anything but this International System, and probably not a school where science is studied employs the old system. This alone is a tremendous advance in a quarter of a century.

The system has been adopted in metallurgy, assaying, pharmacy, electricity, biology, and to some extent in coinage and medicine. The basis of micrometer measurements under the microscope, as, for example, in bacteriological work, in the $\frac{1}{1000}$ of a millimeter ; for finer work, $\frac{1}{100000}$ of a millimeter, the English divisions never being employed. While medical and pharmaceutical schools* have long employed the decimal scale in general chemistry and analysis, prescriptions have until lately been written in grains, scruples and drams. A change is rapidly coming. One large drug firm says that now half its prescriptions are written in metric terms, and the number is on the increase. Another firm says fully three-quarters are thus written ; in small cities it is not more than ten per cent. This change is due mainly to the fact that the 1890 United States Pharmacopœia, issued in 1893, adopted exclusively the Metric System. It seems certain that all medical schools and colleges of pharmacy will soon follow, and that the English System will become obsolete with the profession except among the older physicians.

A few wholesale dealers and manufacturers of drugs and chemicals em-

* *The New York College of Pharmacy uses the metric system exclusively ; all systems are taught.*—[ED.]

ploy it. E. R. Squibb and Sons of Brooklyn use the International System exclusively throughout, and have done so for eight years. They say: "If we were back to *avoirdupois*, we should change again as in 1892."

The very extensive works of the Solvay Process Company of Syracuse, N. Y., employ the system in every possible way in the manufacture of soda ash and bicarbonate. They use it for weighing coal and other supplies, for water and other liquids, for the calculation of heat units and measurements of temperatures, in fact for everything except linear measurements, and such drawings as go outside of their own works. Their SALES are necessarily made by the English System. They say: "We find no disadvantages, and would be very glad could our entire work be upon the Metric System."

The Merrimac Chemical Company, of Massachusetts, in 1893, built a factory for their extensive sulphuric acid works, in which all the tanks were made on Metric dimensions, so that one centimeter in depth equals some number of liters, *e. g.*, 100 or 150. They say: "We have found this to be a great convenience, both in taking stock and in the daily work. There was no difficulty in instructing the workmen to use the system."

The Pennsylvania Salt Manufacturing Company has just built a large plant entirely upon Metric dimensions.

The Waltham Watch Company has used the Metric System exclusively since 1869. They say: "It has proved to be exceedingly convenient and satisfactory."

William Sellers and Company have used it for injector work more than forty years.

The system is used almost entirely in the manufacturing of electrical goods, and in electrical engineering.

Makers of gauges, measuring implements, draughtsman's supplies and the like, have some call for Metric instruments.

Dealers in chemical and physical supplies for schools and colleges have to use both the English and the French Systems. These dealers prefer the latter, and use it whenever it is possible. All importations of glassware, etc., must be made on that scale. Certain goods are always made on the Metric plan; as, *e. g.*, rubber stoppers. Teachers of science might, in a small way, aid the cause by ordering all their supplies according to the international system, instead of the English.

The Library Bureau of Boston, which has branch offices in the leading cities of the world, is helping the cause. All its millions of cards and its thousands of cases have exact Metric dimensions. Even the paper which is made for the company is of Metric dimensions, and each variety is made of a definite number of grams per square meter. They say there is not the least difficulty in the application of these measures by the hundreds of workmen employed in the manufacture of their goods. The system has

been in use for twenty-five years by the American Library Association, whose headquarters are at Albany. In the State Library and other departments of the University of the State of New York, it is used for all blanks and other measurements.

It is the concurrent testimony of the concerns that have reported on its use, that the system is perfectly simple and easy of application, and that it has great advantages over the English.

In the annual reports of the Curator of Classical Antiquities of the Boston Museum of Fine Arts, the measurements of statuary and all other objects and specimens are expressed in meters and decimals, and have been since the first issue in 1876. It is so much simpler to write 1.32 M., than 4 ft. $3\frac{2}{3}$ in., that all museums will be likely sooner or later to adopt this plan.

The large steel and iron companies use the English measures except for export trade. But exports seem likely soon to have an important bearing on this use, since for the thirty days of April, 1900, more than \$40,000,000 worth of manufactured goods were exported from the United States. The opinion of large iron and steel manufacturers is shown by the adoption, in 1896, by the Association of American Steel Manufacturers of resolutions strongly indorsing the bill then before Congress. Here were twelve of the great steel and iron manufacturers urging their members individually to ask their Representatives in Congress to support the Metric Bill.

Opinions of many persons qualified to judge—not only in this country and England, but in Germany—are to the effect that the exports of Great Britain and the United States have suffered, and those of Germany have increased by reason of the non-use of this system in the two former countries. “Made in Germany” is the trade-mark of that country. A few years ago, the *Dry Goods Economist* of New York asked an opinion of leading houses all over the country as to the merits of the International system. There were 187 favorable replies received from 28 States and not one adverse reply. Trade organizations and scientific societies of all sorts have time and again expressed themselves in favor of the meter.

The 1866 law is supposed to allow the Government to use Metric measurements in its contracts, if it so chooses. It has done so in the following departments and cases :

(1) In the Department of the Coast and Geodetic Survey, the meter was adopted as the standard in the beginning and has been so used ever since.

(2) In the Agricultural Department, in all scientific work in chemistry, etc.; and in the Natural History work Metric measurements are exclusively used.

(3) The Post Office Department uses it for foreign mails to metric countries, but not for domestic. Postal cards are of metric dimensions, and, certain coins have been made to Metric weights and measures.

(4) In the Department of Surgeon-General of the Army and also that of the Navy, all contracts for medical supplies embody the Metric System, and all containers—boxes and bottles—are of metric dimensions.

(5) Regulations for U. S. Marine Hospital Service, 1897, made its use compulsory.

(6) In Cuba and Porto Rico the Government uses the system exclusively in all official and domestic work. These countries adopted it years ago.

The people want the example of Government before they will generally make use of the system, and Congress must legislate before the Government Departments will adopt.

How can we aid the cause? Is it worth while to try?

It is a conservative estimate that every child would save a year in education if the International System were exclusively used in this country, and some claim two or three years. Seventy million years lost during the lifetime of one generation of men is a fairly strong argument; but this youthful loss is little when compared to that in practical life. John Quincy Adams, who studied the Metric System as few men have, said: "It is in design the greatest invention of human ingenuity since that of printing." President Mendenhall some years ago computed that there are in this country every year from forty to fifty thousand million transactions requiring measuring or weighing, and he says: Nothing else is so universal as the use of weights and measures, and in nothing else would an improvement be so universally felt."

Now if this International System is such an enormous "time saver"—as every man who has ever used it knows it is—what a tremendous waste of time and energy the American people are undergoing because they are behind the rest of the world. No legislative progress has been made in the direction of weights and measures for thirty-four years, and in this respect WE STAND TO DAY BELOW EVERY OTHER NATION IN CHRISTENDOM.

National legislation is the thing most needed. How can men, individually or as a body, aid in promoting legislative action? In two ways:

(1) By taking favorable action as Associations, not merely by passing resolutions that the given society favors the passage of the Metric Bill—though that is essential—but by appointing a permanent committee, whose members are vitally interested in Metric reform, and will correspond with metrologists, Congressmen, and Metric committees similarly appointed in other associations, so that all may work for the desired result. There are thousands of clubs, societies and associations—scientific, educational, manufacturing, trade, social and popular—many of whose members are more or less interested in this question. If every interested organization would take that sort of action, the Bill which will probably be reported in December, 1900, might easily become law, for no "politics" can be urged against it.

(2) By individual effort—writing to Members of Congress and Senators, stating the facts and asking for favorable action, and by showing the public the superiority of the new system over the old. ENLIGHTENED SENTIMENT IN THIS COUNTRY IS OVERWHELMINGLY IN FAVOR OF THE ADOPTION AND USE OF THIS SYSTEM, not only among scholars and scientists, but among tradespeople and manufacturers, but it is safe to say that a majority of our congressmen do not know this fact and will not realize it till organized societies and individuals make it a part of their duty to force Congress to REMEMBER THE METRIC SYSTEM. Uncle Sam has fallen asleep over his weights and measures, while his neighbors are stealing a march on him.

Fatal Poisoning by Oil of Wintergreen.

Dr. B. Pillsbury reports, in the *Medical Record* (Dr. Cir.), a case of fatal poisoning by oil of wintergreen. A man of middle age took by mistake for whisky two ounces of the oil. His daughter gave him mustard as an emetic, the whites of a dozen raw eggs, milk and very little water. The patient resided in the country; it was nearly five hours after the taking of the oil when he was first seen by the physician. He was then perspiring profusely, complained of feeling "on fire" inside and the skin was very hot. The diarrhœa continued, and in forty-one hours after the oil of wintergreen had been taken death occurred from exhaustion.—*Pharm. Era*.

Book Review.

Plant Structures. A Second Book of Botany. By JOHN M. COULTER, A.M., Ph.D., Head of Department of Botany, University of Chicago. D. Appleton and Company. 1900.

This second volume in botany of the Twentieth Century Text-Books by Professor Coulter forms a companion to his "Plant Relations." The author has presented, in a singularly felicitous manner, the general structures in the plant world. Starting with the algæ, the successive groups of plants are described in terms of physiology and structure. Many of the dry-as-dust details are eliminated, yet much technical knowledge remains. As in the former work, the illustrative features predominate. After describing the different groups of plants, the morphology of the higher gymnosperms is presented, briefly, and chapters on plant physiology and ecology added.

The work makes a worthy addition to the large number of the newer text-books—authentic and terse, well illustrated and well gotten up by the publisher.

J.

The New German Pharmacopœia.

The fourth edition of the *German Pharmacopœia* which comes into force the first day of next January, is now obtainable by the public.

This edition is issued in the same form as its predecessor but expanded to the extent of 84 additional pages or deducting the supplement of 1895, it is 52 pages larger than before.

This increase is due to the admission of new articles, the amplification of the text, so as to include new information, an enlarged preface, and an addition to the number of tables.

Ten substances have been dropped, namely : Auro-natrium chloratum, caffèinum natro-benzoicum, kalium aceticum, keratinum, liquor ferri subacetici, moschus, pilulæ ferri carbonici, thallinum sulfuricum, tinctura ferri acetici ætherea, and tinctura moschi.

On the other hand 26 new articles have been admitted, a list of which follows : Adeps lanæ anhydricus, adeps lanæ cum aqua, æther pro narcosi, alcohol absolutus, arecolinum hydrobromicum, baryum chloratum, bismutum subgallicum, bromoformium, cautschuc, caffèïnonatrium salicylicum, gelatina alba, hydrargyrum salicylicum, hydrastinium hydrochloricum, mel, methylsulfonalum, oleum camphoratum forte, oleum chloroformii, oleum santali, pilulæ ferri carbonici Blandii, pyrazolonum phenyldimethylicum salicylicum, semen erucæ, serum antidiphthericum, tela depurata, tuberculinum Kochi, unguentum adipis lanæ and vinum chinæ.

It will be noted that this list includes two serums, articles which the pharmacist is not in position to either prepare or test, but that difficulty is overcome by governmental supervision, the officers of which are responsible for the quality of the product he is required to dispense.

In view of the contention now existing regarding the basis of atomic weight it is of special interest to note that oxygen has been taken as this basis in a table given in the appendix, the standard being $O = 16$; and it may be added in this connection, that as in the previous edition, chemical formulas are entirely absent from the text.

The book as may be expected shows the same careful work as its predecessor as to chemistry, but is open to some criticism as to changes made in the names of plants.

The text is in the vernacular, as heretofore, the gothic character being used except for scientific titles, the paper and printing is good and the price at which it is furnished (3 marks 65 pfennigs, bound) places it within easy reach of all who require a copy.—*Druggist Circular*.

Notice.

Are you a *registered* pharmacist? If not, and you hold a N. Y. C. P. diploma, do so at once.

Animal Wools and Hairs.*

BY SMITH ELY JELLIFFE, M.D., PH.D., AND ERNESTINE MOLWITZ, PHAR.D.

Contribution from the Microscopical Laboratory, of the College of
Pharmacy of the City of New York.

The hairs of the higher animals are cylindrical or conical, horny structures, growing singly or in groups and having their origin in a follicle in the skin. At the end of the hair is a bulbous enlargement which rests upon a papilla situated at the base of the follicle.

The skin is composed of two layers: the inner layer, cutis, consisting of connective tissue chiefly made up of a mucilaginous substance, and the outer layer, epidermis, which consists of horn cells (also some mucous cells which eventually become horny) and as the hairs consist entirely of horn cells they may therefore be regarded as part or filiform continuations of the epidermis.

Hair structures vary greatly for they are found in all their different stages (of transition) in nature, from the finest wool to the stiff quills of a porcupine, and are classified as grannen hairs (beard hairs), and stichel hairs (bristly hairs). The differences existing in their categories are caused less by their anatomical resemblance than by their external properties of firmness, stiffness, breadth, length, etc.

In order to make this more clear, one notices that at their lower end the grannen hairs on a rabbit's skin cannot be distinguished from the wool hairs around it, whereas the tips have the same structure as the stichel hairs; also that the wool hairs of rabbits, beavers and many other fur-bearing animals show the same typical construction as the real grannen hairs of the domestic sheep.

For this reason the different sorts of hairs are determined more readily by their external appearance.

The wool hairs are fine, soft and curly. The grannen hairs at the extreme third are more straight and stiff, pointed, usually thick and darker than the wool hairs of the same animal and moreover larger than the latter. Grannen hairs and wool hairs together constitute the fleece. Stichel hairs are short and stiff, occurring on less hairy parts of the body of an animal, usually at the extremities—head, etc. Bristles and quills need no further explanation. The former are generally solid and only possess a slightly developed pith, being cylindrical; whereas the latter are more conical, usually hollow and with an unusually large pith.

Examining the hair externally, a bulbous enlargement will be noticed at the base, and above this a contracted portion. The greatest width of the hair lies in the extreme third.

* Translated and arranged from "Der Mikroskopie der technisch verwendeten Faserstoffe." By Franz Ritter von Höhnelt.

The majority of hairs shows an entirely different construction at various cross sections. A good illustration of this will be shown later on by three cross sections of a cat's grannen and wool hair.

CONSTRUCTION OF HAIRS AND WOOLS IN GENERAL.

The greater majority of hairs are composed of three different kinds of tissue. One or several layers of epidermal cells (epidermal scales) are found on the outside, in the center is a strand of diversely constructed elements mostly of a parenchymetic nature, known as medulla (pith, marrow). Surrounding the medulla and between it and the epidermal scales is a fibrous portion, the rind, the fibres being either thin walled or thickened.

Any one of these tissues may be lacking at intervals. If the epiderm is absent it has been rubbed off; this occurs frequently at the tips of the grannen hairs of cats, etc. The fibrous layer or rind is often so slightly developed that it is easily overlooked, especially when the medulla has become unusually large. But in many instances it is missing even in the broadest portion of some thick hairs of the deer.

On the other hand, there is frequently no medulla in wool or grannen hairs, and then again as regards bulk or volume it may constitute the chief mass of the hair.

Breadth and length of hairs vary greatly, not only when comparing hairs of different animals, but also when comparing hairs from the same animal. The finest wool hairs of sheep are scarcely 10 μ . across, yet there are some grannen hairs which measure more than 100 μ . Not only variations in measurements, but also the arrangement and construction of certain tissues, and especially the nature of the elements of the tissue furnish many clues to determine the hair.

The epidermal scales vary greatly as regards number of layers, usually there is but one arrangement of the same, whether imbricated or lying side by side, their color, shape, etc. (bristles are an exception).

Their free outer edge may be quite thin; in that case the hair is apt to be quite smooth, and its contour is regular, even, and not serrate. But if the outer edge and eventually the whole scale is thick then the microscope will show a serrate appearance on both sides of the hair. These serrations may be acute or blunt, decided or not, etc. Hairs used for felting are characterized by these scaly grooves.

The scales of the epiderm of the hair are either so large that even one scale may surround the hair like a cuff, or it may require two or more to do this, as is the case in thick hairs. On thick hairs the scales are often so close that the surface seems to be entirely covered with wavy cross-lines which are caused by the contours of the edges and often present a gnawed appearance.

On thin hairs the scales are loosely arranged, giving the hair the appearance of being short limbed. Frequently the epidermal scales at the tip of the hair seem to be drawn up like a toothed (frayed) rag, especially noticeable in the wool of the rodents, consequently causing them to appear unevenly striped, and also giving the hairs of the carnivora a dainty appearance.

The fibers of the rind are comparatively short, at the same time thin walled to thick walled. Their length varies from 50 μ . to several mm.; in the case of a sheep they measure 80 μ . The fibers are usually flattened and in such a manner that the radial diameter is the smaller one. Therefore the wall halves lie very close and the lumen, when a cross section of entire hair is made, is invisible or only seems like a fine tangential line. It frequently happens that certain rind fibers are larger or show a broader lumen. These represent what will further on be termed fiber spaces. Longitudinally they seem like thicker isolated stripes. The longitudinal striations of many hairs, especially those without a medulla, the pithless, are caused only by the rind fibers and not as might be supposed from the striations of the epidermal cells. In colored hairs the pigment is found, only in the fibers and pith cells, generally in granules or masses with homogeneous contents, stored on the walls, not infrequently coloring even the cell walls; the latter instance occurs in dark bristles.

The medullary or pith cells show all intermediary forms between long fibers or narrow cylinders to thin plates (besides these there are other deviations), but usually they are more or less roundly parenchymatic or shortly cylindrical; usually thin walled, but frequently the cross walls which lie perpendicularly to the length of the hair seem to be quite thick. This is due to the fact that the contents of the cell, which are usually highly colored, have been stored on these walls. The cross walls of the pith frequently tear (break) partially, and in this way a common medullary channel is formed. But in the grannen hairs of some fur-bearing animals the pith cells finally communicate.

If a transverse section shows that the cells are arranged singly, then there will be but one row, or there are several next to each other. The latter occurs frequently in a very regular manner; shown in grannen hairs of some rabbits.

When the medulla is composed of numerous rows of cells, those in the interior will be larger and more thin-walled. The greater part of the lumen of medullary cells is filled with air, especially in white and light hairs. The hairs of some ruminants have a pith that at intervals is in the form of single cells, in small groups or short longitudinal rows. These are known as "pith plates," and are very characteristic. The pith cells are always absent at the base and natural tip of a complete hair as well as in the finer hairs of the ruminants; but the wool of rodents, (insectivora and carnivora) shows a symmetrical single row of pith cells.

Cut across, the hairs are more or less rounded. The hairs of most of the fur animals are flattened more or less, so that on cross section they appear elliptical. Sheep's wool on cross section is circular but never regular, being more triangular or polygonal.

EXAMINATION METHODS AND MICROCHEMISTRY.

It is but seldom possible to distinguish the structural characteristics of wools and hairs, under the microscope, without previous preparation. It can only be done in cases where the hairs are thin, white, or very light, and not too full of air and having swelled up in water. Darker hairs show their structure either indistinctly or not at all, the thin hairs more distinctly than the dark. It is best to view the hair in water. While doing this, it is well to take into consideration that their histological characters can only be seen distinctly after they have completely swelled up. As hairs are frequently oily from natural fatty exudations or materials are so from their manufacture, it is essential that they are boiled with alcohol, washed with ether, or treated in some way that will remove the oil. As the fatty exudations not only contain oils but also substances soluble in water, it becomes frequently necessary, to insure the complete cleansing of the hair, to wash it with distilled water, warmed if need be, after having been treated with ether or alcohol. It is obvious that this soaked hair may not be measured directly, otherwise the results would be too high. According to the measurements a human hair without medulla will swell up 10.67 per cent.; a white alpaca hair, 13.7 per cent.; an Angora hair, 10.2 per cent.; a cow's hair, 16 per cent. Hairs without a medulla will swell up on the average of 10 to 11 per cent., those with a medulla 15 to 16 per cent. Therefore it is necessary to deduct this from the hairs that have been soaked in water in order to get a more correct measurement of their diameter. But as in the most cases an absolutely correct measurement of their diameter is not required, it has become customary to measure them in water and accept this result as final, just as is the case in measuring starch grains, for it is tacitly understood that their measurements are taken while they are in a moist state. But if we desire to know the diameter of a dry hair, it would be necessary to examine it in olive oil or in air. It is to be noted that fatty oils make the wools and hairs very transparent and the fatty exudations very soluble so that under the circumstances such oils become good media for observation.

In determining the diameter of wools and hairs it is to be taken into consideration, that only the minority of hairs are exactly circular. In order to determine the form of one it is necessary to make cross sections or cut it in small pieces, and while examining it under the microscope twist it about its axis by moving it with the coverglass.

A special apparatus has been constructed to stretch the longer hairs and

twist them while taut. With this apparatus one is enabled to determine the diameter of a hair in a dry state. A simple but in most cases effectual method is the following : On a slide, or in cases where the hair is long on a thick and about 4 cm. broad piece of glass, fasten a cork on both ends by means of sealing wax, and through each of these corks draw an iron wire. These pieces of wire, by turning up their outer edges, have become transformed into a sort of crank and can be turned about their axes. To the inner ends of the wires, also by means of sealing wax, fasten the hair to be examined. This can now be easily turned about its axis and stretched as desired.

Cross sections of thick hairs, bristles and quills, these are absolutely necessary to determine their structure, can easily be made by stretching them between two corks, as above, and cutting them with a sharp razor. Thin, soft hairs are placed upon a slide and are soaked with a thick mucilage containing some glycerin, dried, and then cut through cork. Good sections may also be obtained by pouring melted paraffin over them or cutting them, according to Reissner,* in gutta percha. It is better to untwist curled hairs by stretching them on a small board for about twenty-four hours, then heat a guttapercha tablet and press the stretched hair into it. When the guttapercha has become hardened (this can be hastened by placing it in cold water) it will after a little practice be easy to obtain good sections.

At times the individual tissues of the hair are to be isolated. This can be accomplished with sulphuric acid or caustic potash. Applying sulphuric acid will cause the scales to separate singly or in groups, but coil up very much so that their shape cannot be easily determined. In potassium hydrate the hair swells up greatly and then by pressure can be easily resolved into its elements, but these have become somewhat changed by the swelling. It is according to Nathusius† most advantageous to use concentrated ammonia. After treating the hair with ammonia for two or three minutes all the epidermal scales will come off without having undergone much change, and their form can be easily studied. The author uses chromic acid which he finds to be very satisfactory, also cupric ammonia for maceration.

Nitric acid, which is used so extensively for macerating plant tissues, is not at all good for the same purpose in the case of animal hairs ; but it is to be mentioned that it colors all horny tissues an intense yellow and is therefore useful as a reagent.

Sugar and sulphuric acid impart a pink color to hairs. Dyes of all kinds (fuchsin, anilin violet) are readily absorbed, also iodine. Boiling

* Beiträge zur Kenntniss der Haare der Säugethiere und des Menschen. Breslau, 1854.

† Das Wollhaar des Schafes, 1866, page 47.

concentrated solution of chromic acid dissolves hairs immediately, boiling potash dye does the same. On the other hand, boiling hydrochloric acid will not dissolve them. Boiling picric acid stains animal hairs yellow and the stains remains permanent in cold water. Millon's reagent, when boiling hairs with it, will impart to them a brick-red color. A mixture of equal parts of English sulphuric acid and concentrated nitric acid will in thirty minutes dissolve silk and goats' hair, but not sheep's wool; the latter will become colored yellow by it. As all animal hairs contain sulphur, they will all respond to a test for it. Lead acetate which is precipitated with an excess of potassium hydrate, will impart a brown to black color (of lead sulphide).

If hairs are boiled with potash lye free from sulphur, this will, when diluted with water, assume a beautiful violet color upon the addition of a solution of sodium cyanid.

(To be continued.)



What is Life ?

We have called attention to this perplexing problem in previous issues of this journal. In a recent number, the *Journal of the Royal Microscopical Society* copies F. J. Allen's views from an exchange. This writer argues as follows: "Every vital phenomenon is due to a change in a nitrogenous compound, and, indeed, in the nitrogen atoms of that compound. There is no vital action without transfer of oxygen, and the transfer is performed by nitrogen (often assisted by iron). In the anabolic action of light on plants, the nitrogen compounds are affected primarily, and the CO₂ and water secondarily. In the living and active molecule the nitrogen is situated centrally and is often in the pentad state. In the dead molecule it is usually peripheral and in the triad state. The oxygen store of the living molecule is more or less united with the nitrogen, but passes to some other element at death. The nitrogen of the living molecule is combined in a complex and perhaps changeable manner, the compound resembling in some respects the cyanogen compounds, in other respects the explosives, such as nitroglycerin. Life, in its physical aspect, is the culmination of that chemical instability in certain elements which has always kept them circulating at the earth's surface."—*Meyer Bros. Druggist.*

Court Definition of "Drug Store."

An important decision has lately been rendered by the Illinois Court of Appeals as to the legal definition of drug store under the State pharmacy law. A Chinaman, Yee Way by name, who kept a laundry on South Clark street, in Chicago, upon the evidence of Mr. Chaffee of the board of pharmacy, was convicted by a police magistrate of selling opium, contrary to the provisions of the pharmacy law. The Cook County Criminal Court, to which Yee Way appealed, confirmed the verdict of the lower court. Again the case was appealed, the trial judge being Judge Windes, and again the original verdict was sustained.

The contention of the plaintiff in error against the State was that as he did not keep a drug store but only a laundry, where he sold opium for smoking purposes, he was not amenable to the pharmacy law, and further that opium for smoking had not been proven to be a drug, medicine or poison, and, hence, the State's attorney had not made a case.

In his decision Judge Windes, after quoting the pertinent passages of the law and the evidence submitted says :

"The claim that because plaintiff in error did not keep a drug store, but only run a laundry where he sold the opium in question for smoking does not make him amenable to the statute, is, in our opinion, untenable. The statute, in defining the term drug store or pharmacy, says that it shall be construed to mean a store, shop or other place of business where drugs, medicines or poisons are compounded, dispensed, or sold at retail. A laundry is a place of business. Opium is commonly and generally known as a drug, medicine, and a poison. Webster says it is a stimulant narcotic poison, and is smoked as an intoxicant with baneful effects.

"The evidence shows that plaintiff in error kept a place of business, a laundry, and that he sold the opium from that place of business at retail, and we are therefore of the opinion that so far as this contention is concerned, plaintiff in error comes within the terms of the statute.

"What we have said as to what opium is commonly and generally known to be, and the evidence recited, is, we think, a sufficient answer to the claim that the prosecution failed to make a case, because it did not prove that opium used for smoking was a drug, a medicine or a poison."

This decision is a signal victory for the friends of the pharmacy law and nearly as important to druggists in Illinois as the Castoria decision. However, great circumspection will have to be exercised by the board so as not to abuse the power thus conferred.—*Western Druggist*.

Notice.

Are you a *registered* pharmacist? If not, and you hold a N. Y. C. P. diploma, do so at once.

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Original Contributions, Exchanges, Books for Review and Editorial Communications:
Address HARRY B. FERGUSON, PHAR.D., 115 West 68th Street, New York City.

EDITED BY HARRY B. FERGUSON, PHAR.D.,

WITH THE COLLABORATION OF

CHAS. RICE, PH.D. H. H. RUSBY, M.D. V. COBLENTZ, PH.D. GEO. A. FERGUSON, PH.B.
GEO. C. DIEKMANN, M.D. JOHN OEHLER, PH.G. SMITH ELY JELLIFFE, M.D., PH.D.

Notice.

Attention is called to the fact that on and after January 1, 1901, the Board of Pharmacy, as created by Chapter 667, Article XI, Sections 190 to 201, inclusive, entitled "An act to amend the public-health law and the acts amendatory thereof, in relation to pharmacy, and repealing certain sections thereof," can recognize for registration only those persons who appear before it for examination. College diplomas will, therefore, not be accepted. See that you are registered at once (if not already registered) by the present Board of Pharmacy of the City of New York, if you hold a diploma that is now recognized. *The N. Y. C. P. diploma is recognized.* This will entitle you to practice within the jurisdiction of the present Board of Pharmacy of the City of New York (*i. e.*, Greater New York) without further examination.

Are you a *registered* pharmacist? If not and you hold an N. Y. C. P. diploma, do so at once?

Alumni, College and Class Notes.

CONTRIBUTORS.

Alumni Association,	WM. A. HOBURG, Jr., Ph.G., 115 West 68th St., N. Y.
Alumni Notes, Socials, etc., and Classes prior to 1893, . .	CHAS. S. ERB, 121 Amsterdam Ave., N. Y.
Bibliography,	ADOLPH HENNING, Ph.G., 68 William St., N. Y.
Class '93,	EUGENE F. LOHR, Ph.G., 508 Marcy Ave., Brooklyn, N. Y.
Class '94,	FRANK N. POND, 226 Ninth Ave., N. Y.
Class '95,	GEO. J. DURR, Ph.G., Randalls Island, N. Y.
Class '96,	CHAS. G. H. GERKEN, Phar.D., 169 S. 4th St., Brooklyn, N. Y.
Class '97,	E. A. MEINECKE, Ph.G., 14 Platt St., N. Y.
Class '98,	T. B. FURNIVAL, Ph.G., 115 West 68th St., N. Y.
Class '99,	THEODORE E. MEYERS, Dorranceton, Pa.
Class 1900,	ROBERT B. LIVINGSTON, 115 West 68th St., N. Y.
Class 1901,	ABERT C. THOMPSON, 115 West 68th St., N. Y.
Post Grad. 1900,	FANNY A. BLAN, Phar.D., 115 West 68th St., N. Y.
Post Grad. 1901,	THEODORE F. ENDRESS, '00, 115 West 68th St., N. Y.
Legal Notes,	H. A. HEROLD, Ph.G., 108 Fulton St., N. Y.

Prior to '93 Notes.

On Wednesday, August 8, 1900, our good and tried fellow-graduate Professor George C. Diekman, became a "Benedict,"—the happy bride being Miss Emma Cheney of New York. After a brief wedding tour up the Great Lakes, they are now happily domiciled in their home on the upper west side of the City.

Dr. and Mrs. Diekman, we but voice the sentiments of all who know you, when we say, hearty congratulations and our very best wishes to you, for a long, happy and contented life together.

'93 Notes.

The following notice appeared in the *Herald* of Sunday :

EDLICH—ANDERSON.—September 4th, LIDA MARGARET, daughter of Mr. and Mrs. Charles F. Anderson, to THEODOR JULIUS EDLICH, both of New York, at Purleigh Cottage, Brielle, N. J., by Rev. Percy Perinchief.

We congratulate "our Teddy" and wish the happy couple a long, prosperous life.

Billy Hoburg will soon be back to town. His four month's stay at the seashore has done him a world of good and he will return to his work at College as good as new.

The lack of noise coming from Tannenbaum's direction is startling. Either he is dead or in jail, we have not heard which as yet.

Our usually noisy delegation from Jersey has also been unusually passive of late. What's the matter boys, are you all getting to be "dead ones?"

The classes of '92, '93, '94, and '95 had a very enjoyable Outing to Ravenhalls recently. It was a huge financial and social success. Photographs may be purchased at \$7.49 each.

"Moses Mac," the pride of Williamsburg, is as fatally fascinating as ever. Watch your "best goil" when he is around.

Judging from the slowness of you fellows, it is time to stir you up about the Dinner. Save up your pennies and your appetites for that occasion.

EUGENE F. LOHR.

'94 Notes.

During the hot weather which we have had, a number of our boys have found time to stray forth into the rural districts and in so doing have discovered at various points a number of our classmates from whom we seldom hear. Across the ferry from 42nd street, at Fort Lee, Richter is conducting a modern store, and having no opposition in town, must be prospering. We understand he is quite active in civic and political affairs, and as popular as ever in his new field.

Snyder is right hand man at Reeder Bros. summer pharmacy, at Englewood, N. J.

Up in the Catskills, at Fleishmann's, in Sullivan County, Miller, whom many of the boys remember, is located in business, and now making hay while the sun shines.

Clinton has a prosperous pharmacy in Peekskill, which is perhaps the only town outside of New York where two '94 graduates are conducting opposition stores, our genial E. B. Horton being located in the same town.

Our military contingent, Tanne', Davie and Roely, the three hospital stewards of "de ate" (regiment), spent several days at Highlands, having a high time, after their arduous duties in camp. Tanne' with his usual versatility we understand while there organized a new order known as the "Ancient Order of Trolleys," which was in a flourishing condition when they left town, whether "off or on" is not reported.

Wolff is now employed with the Mutual Drug Co., 3d avenue, 29th street.

All members of our class are urged to communicate with the class editor from time to time with any items of news they may have. Our class was one of the largest ever graduated from the college and a great many of our boys are now successful proprietors, or holding responsible positions. Let us hear from you through the ALUMNI JOURNAL, and keep up the interests and prestige of '94, write on one side of the paper, and all communications under 1000 words in length, will be gratefully sent to our editor-in-chief.

F. N. P.

'97 Notes.

H₂O Shears informs me that Geo. Phillips was the feature of a parade of "The Homestead Social Club" which paraded through West 43rd Street last month some time. To judge from the description Phillips certainly must have been *it*. Proving as ever that he still *is* and always will be a *what is* instead of a *has been* as was once erroneously stated.

J. G. Dodson, of Americus, Ga., who has been managing the Dodson Pharmacy at that place has been appointed on the Georgia Board of Pharmacy, being the youngest man ever appointed to that august Board. This is another proof of our boys' ability. Our best wishes and heartiest congratulations "Old Man" and when you visit New York this season, pay us a visit.

He of "Anburn hair fame" Becker will forsake pharmacy for medicine. He matriculates at Cornell this fall.

May the light so shine as it always has for him for he always was the brightest thing that happened both in knowledge and make up. Success is all he knows, so our best wishes for a continuance.

Henry Kleber has bought out Oscar Sommer's store 2d Ave. cor. 43d Manhattan, and so far has had excellent success. Sommer retired owing to ill health I am told.

E. A. M.

1900 Notes.

It is with deep regret that I have to report the death of our classmate, Joseph Costello, which occurred at his home in New Haven, Conn., Saturday noon, August 18th. Little do we know or appreciate what the pang of death means until it comes near to us, and to those who were his associates at college, it has been felt keenly. Tuberculosis, thou art certainly grasping. To the bereaved ones, the Class of 1900 extends its innermost and sincerest heartfelt sympathies.

Jonnie Helmecke (does he raise it?) has returned from a long vacation amongst the Berkshire Hills.

They go. DAY GO. DAGO.

Britton is back in the fold.

The members of Class of 1900 are cautiously warned to live up to their parole and report to the JOURNAL periodically.

Helpburn, Mai, Pundty, Mossy, Kal. liss Key, Nohn, End Duss have taken unto themselves the P.G. course.

Pearly Regan has left the whirl of the Metropolis for his stationary home in Windsor Locks.

Lage, suffering from a sudden indisposition, has grave intentions of returning to to his home in Iowa.

Decker still parts his hair in the middle of his cranium and combs it down over his forehead.

Emeis has returned to the West.

Jorgie came from Connecticut to visit the familiar spot and to buy a watch. He needs watching, for he complains of a bad chronic "cold."

The corpulency of Willie Hill speaks loudly and plainly of "a liven easy."

Will Smith has acquired the management of a store in White Plains.

Freess has become frozen in at 38th street and 8th avenue.

Wilson cannot tear away from the luring pleasures of the Manhattan Borough.

Kaehrle is looking for a job. "Oh, if I only had a job!"

Lane, the little fat fellow with curly locks, contemplates studying the skull and cross-bones.

An easy chemical equation: Aspirant + H₂O + Spts. Fermenti—allow to settle, strong cigar + warm room = "such a headache," and—

Some two years ago a hundred and men representing different nationalities and languages were apprehended on the heinous and appalling charge of illiteracy in the mysteries of "Apothekeri." Being brought and tried before the stern, impartial and learned jury of the Profs. of N. Y. C. P., and sustaining the endurance of an exceedingly long, needed and necessary trial. This respected and just body brought back a decision, liberating them publicly amid the congratulations of their many friends, and giving each exonerated person the proper credentials allowing and permitting she and he to practice the honorable and legitimate profession of "Stamp Selling."

Handle gentle clumsy Desiccator,
And fragile porcelain crucible.
The fall and breakage of costly glass
Is surely always lamentable.

The boys are knocking sound single hits from Professor Ferguson's curves. They hope to make home runs e're the elapse of nine weeks.

Fair dame of pharmaceutical knowledge supreme,
Doth have on her brow a cloud (under her breath avow),
Awaiting the steadying of balance beam (the cessation of vibrations),
Impatient, she'll swear aloud.

Awake, ye sleepers, and let the JOURNAL hear from you.

'OI P. G. Notes.

"May," "The Model Paris Fashion Plate."

Stop! Stop! Not that cough, thief or horse, but all nonsense, and get to earnest work, its a "uneeda."

Trust! Trust! Trust! wherever we turn, look or read, the spectre of this hard, heartless, cruel, covetous monster ever appears.

Even in the college, pill rollers, Hepburn is endeavoring to make a corner in second-hand aprons.

IMMATERIALISM.

The most ardent supporters, it is claimed, of the "Doctrine of Spirits" are the Majors and Colonels of the Blue Grass State.

"May," the funny looking man of the "P. G's."

George "Moss" emphatically asserts that he will not permit any growth of a vegetative character,—

Zahn says he is,—

Schmidt the "dark horse,"—

Kaliski is on the third and last lap,—

Stern appears to be—

A real, genuine, non-chemical blond.

Kay's Kurious Kolumn.*

I attentioned the free lunch gif to my old College chumps "Karlschen Erb," I came mit a fellow what they call "Eddie" und I never meet mit such receptions before. Ven the "naughty Mobile horselessness" lands us at the door two notorious, I mean popular mans met us, von say he paid the freight und the other has got gescheft under the chestnut tree.

Anyhow ven ve reach where the lunch vas I surprised myself to find the place full of mans, I taut I vas in pool room, but its good ting dot a man vat is called "Pilly" explanationed himself, he gif me his hand und say "gesonheit!" here is vere dot Karlschen Erb eggspects to get von suprisement. Den my heart fills mit much joy. Dot man "Pilly" is a wonder, he makes all the "joints" dey use in the tenderloins, he looks like von of dem fellars vot make Milwaukee famous, dere was also another man dot vas all boliteness, I was göing to gif him der grip, only he refusaed me und somebody says he vas Kellner.

Den a little poy vat is called "Ruddy" sitted down und played some of dot ragged time music, about "Ven you ain't got a cople of dollars vell its nix conmeraus," dis seemed to make dot Doctor Deekman's mad und he at once satted down py the tables, den cfry body feels der same way, und py jove nothing could move dem again until "Karlschen Erb" commed in, his pockets bulging out mid niggles, looking for little game of pinocle, but it vas up to him dot time und he vas speechless for the moment.

I dink the geschaft was on the fritz mid dot saloon feller, for I nefer see soo much before as he gif us, id vas all fine und vent vell undil dey tried to make us eat poison, dis vas a too muchness for liddle Villie, I hurled prayers, pleadings und hard boiled eggs at der crowd, but it vas no use, dey all took dere leetle dose, My! but I feel sorry for all de widows dere must be to-day, I just reported dot saloon keeper to der Journal.

Also dere vas a fellow I vas sorry for, he hadt sore throat und could only relief himself by gargling at the piano, dey called him Schmalz Gescht vich I am told means "God save Ireland." Everybody made jollys out of Karlschen, I hope he has good forgetter, odewise der Bride vill be sorry what she met him, a little advice is all right, but like beer, too much makes a fellar rattled. Karlschen remindts me of dot man Odell which runs after der Governor, he is good listener, but I hope he vill take advice und don't believe all he hears because like golf, marriage has lots of links you don't was seed at once.

* With apologies (profuse) to "Diederich Dinkenspiel" (George V. Hobart), *Baltimore American*.—[ED.]

The
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CONTENTS

Urine Analysis by the Pharmacist	201
GEORGE C. DIEKMAN, PH.G., M.D.	
Animal Wools and Hairs	206
SMITH ELY JELLIFFE, M.D., PH.D. ERNESTINE MOLWITZ, PHAR.D.	
Dispensing Capsules in Dry Form	216
CHARLES A. LOTZ, PH.G., 1900.	
Book Reviews	217
Notices	219
Class Notes, etc.	220-222



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No. 9.

Urine Analysis by the Pharmacist.

BY GEORGE C. DIEKMAN, Ph.G., M.D.

(Continued from July Number.)

PART FIFTEEN.

QUANTITATIVE DETERMINATION OF URIC ACID. (*Continued.*)

2. *Method of Salkowski-Ludwig.*

By this method the Uric Acid is precipitated in the form of a silver-magnesium salt. From this it is again liberated, and then weighed.

If albumin is present it must be first removed.

Solutions required :

(a) Ammoniacal solution of silver nitrate : 26 grammes of silver nitrate are placed in a liter flask, and dissolved in distilled water. Ammonium hydrate, in excess, is then added until the precipitate which first forms is redissolved. Then add distilled water enough to make 1 liter.

(b) Magnesia mixture : 100 grammes of crystallized magnesium chloride are placed in a liter flask and dissolved in distilled water. Ammonium hydrate is then added until its odor predominates, after which enough cold saturated solution of ammonium chloride is added to redissolve the precipitate of magnesium hydrate which first forms. Lastly add enough distilled water to make 1 liter.

Solution of potassium or sodium sulphide : 15 grammes of potassium or hydrate (or 10 grammes of sodium hydrate) which must be free from nitrates and nitrites, are dissolved in 1 liter of water. One half of this solution is saturated with hydrogen sulphide, resulting in the formation of acid potassium sulphide. To this add the remaining, unsaturated half, thus forming a solution of potassium sulphide.

Execution of method : Mix 20 cubic centimeters of the ammoniacal silver nitrate solution and 20 cubic centimeters of the magnesia mixture, in a beaker and add enough ammonium hydrate to redissolve the precipitate of silver chloride which has formed. This mixture is then added, stirring constantly, to 200 cubic centimeters of urine, and set aside for $\frac{1}{2}$ –1 hour. The precipitate which has formed, and which holds the uric acid, is then transferred to a filter and washed two or three times with distilled water containing a small quantity of ammonia. It is not necessary to remove the small amount of precipitate which adheres to the sides of the beaker. The still moist precipitate is then transferred to the beaker, (by means of a glass rod and wash bottle) in which the first operation (precipitation) was carried out, taking care not to injure the filter. 10 cubic centimeters of the potassium sulphide solution are now diluted with an equal volume of water and heated to boiling. The boiling mixture is then passed through the same filter into the beaker containing the precipitate. Wash the filter with a small volume of hot water and then place the beaker on a water bath and heat until the entire precipitate appears black (continued heating at a high temperature must be avoided, as uric acid in alkaline solution, upon excessive and prolonged heating, with free access of air, is converted into uroxonic acid). After cooling filter through the previously used filter, into a capsule and wash the filter with a small quantity of distilled water. To the combined liquids (filtrate and washings) add about 5 cubic centimeters of diluted hydrochloric acid and concentrate to about 15 cubic centimeters. Add a few drops of concentrated hydrochloric acid and set aside for 12–24 hours. Crystals of uric acid will then have formed. These are collected on a tared glass-wool or asbestos filter (a paper filter if previously dried at about 110° C., may be used), and washed successively with small quantities of distilled water, alcohol, ether and carbon disulphide, the latter to remove sulphur if it is present. Lastly wash with ether and dry at 100° C., and after cooling, weigh. The difference between the weight of the filter alone, and the weight of the filter with the crystals of the uric acid represents the weight of the latter. The quantity for 24 hours can then readily be calculated. If the crystals of uric acid appear highly colored, dissolve them in hot water with addition of a small quantity of sodium or potassium hydroxide solution. Filter, wash, acidify with hydrochloric acid and concentrate to small volume, after which set aside to crystallize. Then proceed in the same manner as indicated above.

If carefully executed this method yields very trustworthy results.

3. *Method of Haycraft (titrimetric.)*

This method is based on the principle that uric acid in the presence of magnesium salts is precipitated by ammoniacal silver nitrate, 1 molecule of uric acid corresponding to 1 atom of silver.

The quantity of silver used is ascertained by titrating back with solution of ammonium or potassium sulphocyanate.

From the quantity so used the quantity of uric acid is calculated.

If albumin is present it must be first removed.

Solutions required :

(a) Ammoniacal solution of silver nitrate :

(b) Magnesia mixture : These may be the same as those employed in the Salkowski-Ludwig method.

(c) $\frac{1}{50}$ or $\frac{1}{100}$ normal solution of ammonium or potassium sulphocyanate, which has been carefully standardized with solution of silver nitrate of the same strength.

Execution of the method (modification of Herrmann) : 50 cubic centimeters of urine are decomposed with 5 cubic centimeters each of ammoniacal silver nitrate solution and magnesia mixture. Allow the precipitate which forms to settle and decant the clear liquid upon a filter. Then distribute 4 grammes of sodium bicarbonate (in coarse powder) upon the surface of the filter and transfer the entire precipitate to the filter. Now wash with water to which a small quantity of ammonia water has been added, until the washings are free from chlorides and silver. The precipitate on the filter is then dissolved by means of 20-30 per cent. nitric acid, and the filter well washed with water, incorporating the washings with the filtrate. The combined liquids are then titrated with $\frac{1}{50}$ or $\frac{1}{100}$ normal solution of ammonium or potassium sulphocyanate in the same manner as indicated under chlorides.

1 Cc. $\frac{1}{50}$ KCNS or NH_4CNS v.s. = 0.00336 uric acid

1 Cc. $\frac{1}{100}$ KCNS or NH_4CNS v.s. = 0.00168 uric acid.

The results obtained by this method are usually high.

4. *Method of Czapek.*

This method is very similar to that of Haycraft. Instead of, as in the latter method, estimating the silver in the precipitate, the silver in the filtrate is estimated. The quantity so found is deducted from the total quantity of silver used. The difference represents the quantity of silver in combination with uric acid.

High results are the rule with this method.

Albumin if present must first be removed.

5. Method of Hopkins.

This method is based on the fact that a complete precipitation of uric acid, in the form of ammonium urate, results, when urine is saturated with ammonium chloride. The ammonium urate thus obtained may be decomposed with hydrochloric acid, uric acid separating in the form of crystals. The crystals are then weighed. Or the precipitate of ammonium urate may be washed with a saturated solution of ammonium sulphate until free from chlorides, after which it is decomposed with hydrochloric acid and the crystals so obtained dissolved in a small quantity of water with the aid of sodium carbonate. The mixture, after addition of concentrated sulphuric acid is titrated with N/20 potassium permanganate solution. Other ammonium salts besides ammonium chloride may be employed, and complete saturation is not an essential. In general, the addition of 10–15 per cent. of such salts suffices. A number of modifications of this method are in general use.

Solutions required :

N/20 Potassium permanganate solution which has been carefully standardized with N/10 oxalic acid solution.

1.578 grammes of potassium permanganate are dissolved in enough distilled water to measure 1 liter. To standardize the solution proceed as follows :

Place 10 cubic centimeters of the N/10 oxalic acid solution in a beaker, add a little water and sulphuric acid and warm to 60° C. Then add the potassium permanganate solution until a permanent pink color results. This should require 20 cubic centimeters of the latter solution. If a lesser quantity (say 19 cc.) were required, the factor of the potassium permanganate must be calculated.

Example : 10 cubic centimeters of N/10 oxalic acid solution required 19 cubic centimeters of the potassium permanganate solution. Then $20 \div 19 = 1.0526$, which represents the factor of the potassium permanganate solution. The number of cubic centimeters of this potassium permanganate solution used in any operation must be multiplied by 1.0526. The result gives the number of corresponding cubic centimeters of a N/20 potassium permanganate solution.

Execution of method :

(a) Modification of Ritter : 100 cubic centimeters of urine are saturated with ammonium chloride, set aside for at least two hours with occasional stirring. The resulting precipitate of ammonium urate is washed with a saturated solution of ammonium sulphate to free from chlorides, and is then washed into a flask by means of a little hot water. Sodium carbonate (free from chlorides) is then added until solution is effected. Dilute to 100 cubic centimeters and add 20 cubic centimeters of concentrated sulphuric acid. Titrate at once with the N/20 potassium permanganate solution.

One cubic centimeter of this solution according to Ritter is the equivalent of 0.00361 of uric acid.

(b) Modification of Folin: 10 grammes of ammonium sulphate are added to 100 cubic centimeters of urine, stirring until solution is effected, after which add ammonia water until the mixture is slightly alkaline. Then set aside for at least two hours. After this the precipitate of ammonium urate is transferred to a thin filter and washed free from chlorides by means of a 10 per cent. solution of ammonium sulphate. Then transfer to a beaker or flask, add water to make 100 cubic centimeters and then 15 cubic centimeters of concentrated sulphuric acid, and titrate at once with the N/20 potassium permanganate solution.

One cubic centimeter of this solution according to Folin is the equivalent of 0.00375 of uric acid.

For purpose of greater accuracy a correction of 1 milligramme is added to the final result.

The addition of sulphuric acid raises the temperature so that if the titration is carried out at once, no additional heat need be applied. A temperature of about 60° C. is most suitable for the reaction.

As will be noted, Ritter found the uric acid equivalent of one cubic centimeter of N/20 potassium permanganate solution to be 0.00361, while Folin and others found it to be 0.00375. The writer has invariably obtained results which closely averaged 0.00375.

The method yields trustworthy results.

6. Method of E. Wocner.

150 cubic centimeters of urine are placed in a beaker and warmed to 40–45° C., then 30 grammes of ammonium chloride are added and the mixture shaken until all is dissolved. After setting aside for $\frac{1}{2}$ –1 hour the resulting precipitate of ammonium urate is collected on a filter and washed with a 10 per cent. solution of ammonium sulphate until free from chlorides. After this the precipitate is dissolved (while on the filter) in hot 1–2 per cent. solution of sodium hydroxide. The filter is washed with hot water and both washings and filtrate are placed in a capsule and heated on a water bath until all ammonia is expelled. The resulting solution (alkaline) of uric acid is now placed in a Kjeldahl flask and treated as in the Kjeldahl method for nitrogen, previously described. The ammonia formed is estimated by means of N/10 sulphuric acid.

1 cubic centimeter of N/10 sulphuric acid is the equivalent of 0.0042 of uric acid.

The method is accurate if carefully carried out.

(*To be continued.*)

Animal Wools and Hairs.*

By SMITH ELY JELLIFFE, M.D., PH.D., AND ERNESTINE MOLWITZ, PHAR.D.

Contribution from the Microscopical Laboratory of the College of
Pharmacy of the City of New York.

(Continued from p. 194.)

SPECIAL OBSERVATION OF THE MORE IMPORTANT ANIMAL HAIRS AND WOOLS.

Among these are to be classed the following sorts of animal fibers :

1. Sheep's wool (from *Ovis Aries*).
2. Goat's hair (from *Capra hircus*).
3. Calf's and cow's hair (from *Bos Taurus*).
4. Angora hair (from *Capra hircus angorensis*).
5. Indian shawl wool, Paschima (from *Capra hircus laniger*).
6. Camel's hair (from *Camelus Dromedarius* and *bactrianus*).
7. Alpaca wool (from *Auchenix Paco*).
8. Vicuñas wool (from *Auchenia Vicunna*).
9. Horse hair (from *Equus caballus* and other species of *Equus*).
10. Rabbit hair (from *Lepus Cuniculus*).
11. Hare's hair (from *Lepus timidus*).
12. Beaver hair (from *Castor Fiber*).
13. Muskrat hair (from *Fiber zibethicus*).
14. Cat's hair (from *Felix domestica*).
15. Swine bristles (from *Sus scrofa* and *domestica*).

Less important are the hairs of some common furs as they can hardly be reckoned among the fibers, although they are used for the manufacture of paint brushes (pencil). For this reason some illustrations with some remarks are added to the end of this article, which will be sufficient to give an accurate conception of the subject of furs.

Sheep's Wool.—It has been stated before that there are three kinds of hairs, stichel, grannen and wool hairs. Those sorts of hairs and wools which are obtained from wild or not carefully raised animals consist chiefly of two sorts, grannen and wool hairs, of which either one or the other predominates; whereas the fine sheep's wool of commerce consists mainly of but one variety of hairs, either wool or grannen. Only the fleece of the most common domestic sheep (Zackel sheep, German sheep, Hungarian sheep, etc.) consists of an equal amount of wool and grannen

* Translated and arranged from "Der Mikroskopie der technisch verwendeten Faserstoffe." By Franz Ritter von Höhnelt.

hairs. From this the conclusion can easily be drawn that what is known in commerce as sheep's wool consists of three different kinds of hairs, and consequently will also differ very much microscopically.

I. The product obtained from the Merino sheep and its allied species, as Saxon, Electoral, Negretti sheep, also from the two English breeds, Southdown and Hampshiredown sheep, consists of pure wool hairs (really sheep's wool).

II. The sheep's wool obtained from the New Leicester breed consists of pure grannen hairs.

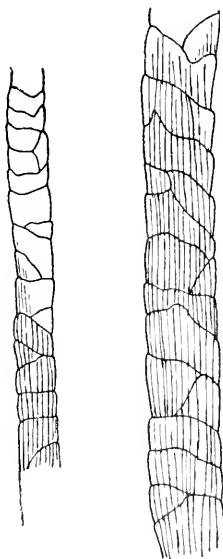


FIG. 1. Merino wool. Fine hair showing scales and fine striations. $\times 350$.

FIG. 2. Cultivated Merino, Rambouillet Breed. Showing scales and longitudinal striations. $\times 350$.

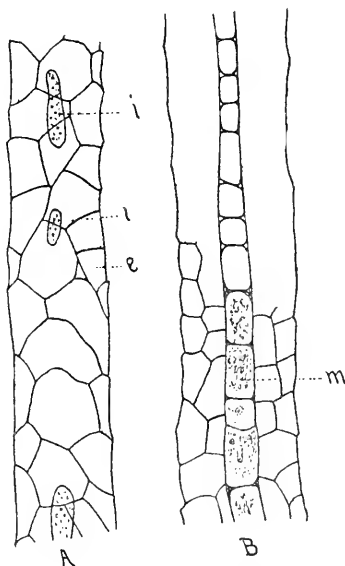


FIG. 3. English Leicester Wool. Grannen hairs. A. Hairs with medullary nodes, (*l*) and scales (*e*). B. Hairs with central cylinder. Epidermis scales are somewhat concave. $\times 350$.

III. The product obtained from the ordinary domestic breed (German sheep, East European breeds, Australian, South American, etc.) consists of a mixture of grannen and wool hairs.

If we take into consideration that the wools of the numerous breeds, even with a like structure, vary much microscopically, we can infer that the microscopical characteristic of the so-called sheep's wool becomes difficult; all the more so as several other kinds of hairs resemble certain kinds of sheep's wool very much. Add to this the fact that the same hair at certain or several places (base, middle, tip) is very different, then the above difficulties will be increased.

We will first observe those wools which consist entirely of wool hairs.

Merino Wool (Fig. 1) and its *Allied Species*.—These are characterized in the first place by their fineness (12 to 37 μ in thickness); secondly by their distinctly imbricated scales, of which there is but one, or two, in each cross-section of the hair, seldom more, and they are therefore cylindrical or semi-cylindrical.

Medulla is always absent. Medullary isles which may be present must be regarded as errors.

The fibrous sheath is firm, well developed and distinctly longitudinally striate. The scales are perceptibly thickened at the fore edge.

The wool always appears distinctly or conspicuously indented or serrate. The scales seem to be tucked like paper bags one in another, especially noticeable in the case of the finer sorts. The front edge of the scales is slightly sinuous, more or less transverse. The free parts of the scales are often as wide as the fiber, so that the length of the free scale edges is, on the average, as great as the breadth of the entire fiber. Fig. 1 can serve as a type of a fine thread of one of the finest Merino drawn wools.

Very fine wools are obtained from the breed derived from the Rambouillet stock.

This cultivated breed was derived from the Merinos, therefore the microscopical characters of the Rambouillet wools are almost identical to those obtained from the Spanish breed. A sort that was minutely examined consisted of normally sinuous wool hairs 13 to 34 μ in thickness; the scales were entirely or half cylindrical, not as high as those of the real Merino, cut more on the slant, coarser; the outer edge frequently showed a large dull or pointed projecting tooth, which occurs less frequently in the Merino. The fibrous sheath is very coarsely striate and the hair, which is always without a medulla, is distinctly dentate at the sides (Fig. 2). The wools of the pure cultivated Saxon Electoral stock and the Australian Imperial, which are descended from the Escorial breed of Spain, are, on the whole, finer than the Spanish wools and otherwise not different microscopically from the Merino wools.

The finest and finest curled wools are those obtained from the Saxon Electorals.

Concerning sheep wools which consist only of grannen hairs, to this class belong the English Leicester and New Leicester breeds (Fig. 3).

These are fine (30 to 60 μ in thickness), glossy wools with marked but coarse quarta curls and generally long (10 to 20 cm.). The hairs are all of about the same breadth. On the extreme end about 30 μ and further down to about 60 μ . The outer 3 or 4 cm. of the length are always without a medulla, with distinct thick edged echinated and imbricated scales. Further down single narrow and elongated medullary cells appear here

and there, short medullary cylinders possessing but $\frac{1}{4}$ – $\frac{1}{5}$ the width of the fiber and are sometimes absent at distances. At the middle of the fiber an indistinct scaly tissue, scales arranged in plates, will sometimes appear. Frequently this arrangement will be quite distinct, but not as a rule. Several centimeters above the base of the hair the cylinder becomes continuous and finally occupies half of the breadth of the fiber. At first it consists of one row of elongated medullary cells, later on two, less seldom three rows of transverse elements which conduct air and have coarse granular contents. There is often a distinct plate arrangement of the epidermal scales present here. These are mostly thick-edged, but often very indistinctly.

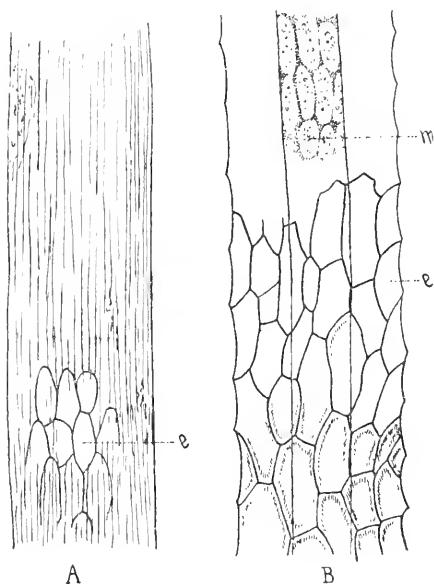


FIG. 4. Hungarian domestic wool. *A*. Near the point, epidermal scales, *e*, showing indistinctly at the base. *B*. At the center of the hair. Central cylinder, *m*; concave epidermal scales. $\times 350$.

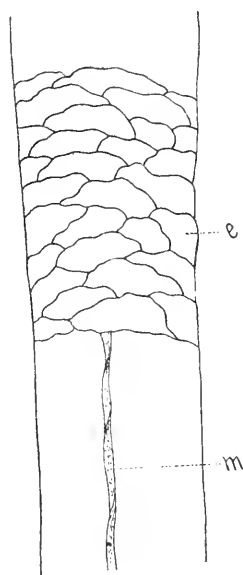


FIG. 5. Grannen Hairs of a Wallachian Sheep Wool. Epidermal scales, *e*, thin and narrowly peltate. Thin central cylinder. $\times 350$.

Longitudinally the Leicester fibers show great irregularities in their thickness, but this irregularity occurs so uniformly that the fiber must be considered homogeneous (Fig. 3).

These statements refer to the medium class of Leicester wools. The finer ones resemble the Merino wools very much, the main differences being their greater length, 15 to 20 cm., their very uniform and greater thickness (at tip $34\ \mu$, at base $46\ \mu$) and coarse wooliness (quarta). The fibers of an English Long-wool (combed wool yarn) which was

examined more closely microscopically showed no trace of a medulla, a coarsely striated fibrous sheath, not very thick epidermal scales, whose slightly thickened fore edge sometimes ran transversely or sometimes on the slant, and always showed an imbricate arrangement. The scales were more broad than high, often half or entirely cylindrical. A Leicester wool known as long drawing was about 30 to 50 μ thick) a medium thread at base 42, middle 47, tip 42 μ thick) and almost without a medulla. Even normally thick parts of the hair showed single narrow and long medullary isle cells, this serving to identify them as grannen hairs and differentiate them from the Merinos.

Longitudinally they showed great irregularities in thickness. The fibrous sheath was distinct and coarsely striate. The scales were thin and often lacking at the tip; their edge was either slightly or not at all thickened, were mostly imbricated, at some places they were indistinctly plated. For that reason the indentations of the fiber were indistinct or lacking.

Microscopically the coarser ones approach more closely the characters of the ordinary domestic wools. The thickness increases rapidly from the sharp lamb point: 3 mm. below the tip they were 30 μ thick; 5 cm. away from it the medullary isles start with a strand thickness of 38 μ . At the middle of the 12 cm. hair the average thickness is about 70 μ , at places however 90 μ , and here is found a 40 to 60 μ thick medullary cylinder consisting of two or three rows, which as it approaches to a 50 μ broad base, becomes single-rowed and finally consists of but elongated medullary isles. In fact, the older wools (without lamb tips) must show a more uniform course of thickness and medulla. The epiderm is generally scaly, seldom arranged in plates. Where the medulla is very broad the microscopical picture will resemble that of a goat hair on account of the seeming absence of the fibrous sheath, and the several-rowed and transverse medullary cells. Moreover, in the case of these coarser Leicester sorts (which are known as Long-coarse) the medulla is, notwithstanding the great thickness, often lacking at places, generally only one rowed and slightly developed.

Ordinary Domestic Wools.—Their microscopical properties become more apparent when we characterize some extreme sorts. For instance, take an ordinary Hungarian domestic wool of inferior quality. It can immediately be observed that the straight staple is composed of two kinds of hairs. In the first place 10 to 15 cm. long grannen hairs forming the free staple end. These are 50 μ thick and possess a continuous medullary cylinder. These grannen hairs are quite stiff, almost bristly, straight and sleek (Fig. 4). Secondly, wool hairs are present; these being but 5 to 7 cm. long and only 30 μ thick, and therefore only assist to form the inner half of the staple. They possess no pith and are coarsely sinuous (quarta or even coarser).

The straight grannen hairs at the base are 80μ (medulla, 34μ), towards the middle at thickest portion, 90μ (medulla, 35μ) and at the tip 70μ (medulla 30μ) thick. The medulla forms an almost even continuous cylinder; constrictions of the same where it is single-rowed are seldom. In those instances the cells are elongated. At the normally thick places the medullary elements are more round, but never transverse. The entire fiber, as well as the most straight hairs of natural breeds, shows a uniform thickness and an almost circular cross section (in this respect it differs from fibers obtained from a stock that has been hybrid).

The epidermal scales are two to three times longer than broad. The breadth is 16 to 20μ , so twelve to fourteen scales may surround the fiber.

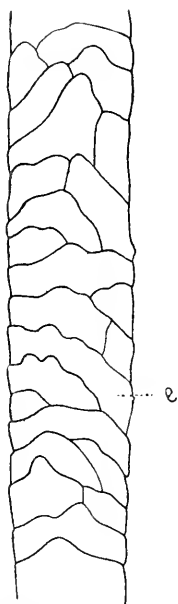


FIG. 6. Grannen Hairs of Banater Wool. $\times 350$.

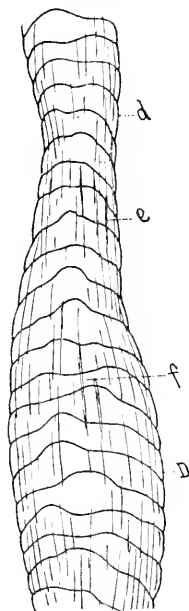


FIG. 7. Grannen hairs of a German Domestic Wool. Showing thin (*d*) and (*D*) thick places. Striations (*f*) and epidermal scales (*e*). $\times 350$.

The scales are narrowly peltate, pointed on the two upper sides and rounded semi-circularly. The edge is much thickened and very refractive. The scales besides this are concave, not distinctly imbricate, but are arranged more like plates. For this reason the fibers appear to be straight or slightly sinuously toothed, never serrate. Like most coarse straight grannen hairs, the Hungarian domestic wool does not contain much oil and is therefore easily injured at the tips by friction.

For that reason the epiderm is frequently lacking at the tip and several

centimeters below it, and here the hair seems to be longitudinally striate, due to the fiber cells.

The wool hairs are 5 to 7 cm. long and very uniformly 20 to 40 μ thick, very circular and at places entirely smooth without echinations at the edge. By this means as well as the lack of a regular curling they can be immediately distinguished from the Merino wool hairs which possess an irregular thickness and decided echinations. The medulla is never present. The epidermal scales are very thin and often scarcely visible. The front edge of the scales is not thickened, is drawn forward, manifold and finely toothed, and the scales are entirely or half cylindrical, and the arrangement is imbricate. On the whole these wool hairs resemble Angora (grannen) hairs microscopically; this similarity is increased by their straight fibers, of which some of them appear like sharp dark lines.

The structure of the common Wallachian sheep's wool deviates much (Fig. 5). It represents an entirely different form among the ordinary domestic wools. The staple also consists of wool and grannen hairs. The latter are about 15 cm. long, the former about half of this. Both are very vitreous, glossy, slightly wavy, but not straight. At the tip the grannen hairs have a very narrow medullary cylinder (tube) and are about 76 μ thick. The scales are entirely lacking (have been rubbed off). Several centimeters below the tip the scales appear and are at first on one side. The medullary cylinder is almost continuous, and relatively very narrow ($\frac{1}{4}$ – $\frac{1}{5}$ of the hair's breadth). Towards the middle the breadth of the fiber (hair) increases to about 100 μ ; for this reason the fiber is very uniformly thick and the frequent thickenings and constrictions observed in the pure breed wools do not occur. Unlike the Hungarian wool, this fiber is not entirely circular. The medulla is not found at the base but 1 or 2 cm. above it and in the form of a narrow line. The scales do not at all resemble those of the Hungarian domestic wools (Fig. 5). Their width is greater than the height, are very thin and are only visible on account of the slightly thickened edges; they are not concave and the edge is frayed dentate (ausgefressen gezähnelte); their arrangement is distinctly imbricate but the fiber is hardly indented, generally almost even.

The wool hairs of the Wallachian domestic wools bear an indisputable relationship to their grannen hairs. They are thinner (tip 22 μ , middle 50 μ , base 38 μ), more sinuous, short and circular (stielrund). The edge of the pithless fiber is distinctly serrate. The scales are broader transversely and distinctly thickened at the front edge.

Hungarian Zackel Wool.—The examined sample consists of grannen wool hairs. The former are about 30 cm. long, vitreous, scarcely wavy and almost straight. At the base they are 84 μ with a medullary channel 21 μ in thickness. The epiderm here has a paved appearance and consists

of 4 to 6 angled, concave cells which are generally longer than broad, but still almost isodiametrical. The side edge of the fiber is scarcely indented. The edge of the epidermal cells is much thicker and very refractive. The hair is somewhat thicker several centimeters above the base, the hair is somewhat thicker and has conspicuously concave almost shell-like epidermal cells, having a glossy edge. The medullary cylinder which has been continuous up to this point now shows this peculiarity, that the medulla disappears and the fiber gradually becomes but $35\ \mu$ in thickness and assumes a structure which is just the opposite of the other course of the fiber. Nowhere is it more fully illustrated than in this instance that one and the same hair may microscopically assume structures at different sections that are characteristic of other hairs. It lacks the medulla, the fiber becomes uniformly thick and smoothly cylindrical and obtains very transverse (horizontal) only 4 to $8\ \mu$ high epidermal scales which are half or apparently entirely cylindrical and imbricate. The regular fiber cells impart to the fiber a beautiful straight striation. Two further characteristics are found in this class. First here and there on the fiber we find a longitudinal furrow. Then the medulla is not infrequently entirely eccentric so that it seems to be closely pushed to one side. Local swellings and contractions also occur. The former occurs chiefly at the expense of the at times very wide medullary cylinder; wherever this is eccentric the fiber as a rule is much thinner (40 to $50\ \mu$). It is also to be mentioned that the outline of the medulla is often not well defined. The medullary cells are generally elongated and are arranged in 2 to 4 rows, but it is difficult to distinguish them as such.

The wool hairs are constructed somewhat more regularly, are about 10 cm. long and 35 to $40\ \mu$ thick, and are generally irregularly coarse curled, without a medulla, with more horizontal low imbricated scales, which are very thin, possessing an edge that may or may not be thickened. The epidermal scales are half to entirely cylindrical. All transitional forms of grannen and wool hairs are found in the Zackel wool.

Banat (c) Zigarra Wool (Fig. 6).—The following description proves that there are some ordinary domestic wools that are almost without medulla, that is have less on the average than the Leicester wools.* The chief bulk of the examined sample consists of grannen hairs 30 to $70\ \mu$ thick. All the finer ones were entirely without a medulla, the coarser ones partly so. Only a part of them contained medullary isles, which were generally very narrow, almost linear and hardly visible. Larger isles (which, like all the rest, always consisted of but one row) as well as longer medullary strands were rare.

The scales with generally thickened edges are broader transversely and imbricate. Seldom arranged smoothly. The fibrous sheath is straight

* Die Wohl von der Sudrussischen Zigaya zu unterscheiden ist.

and coarsely striate. The ends of the hairs for the length of several centimeters are entirely smooth and without scales and consist therefore only of a cylindrical bundle of fibers. The entire fiber (hair) is smooth, vitreously glossy, irregularly thick and frequently more or less flattened.

Other coarse domestic wools also, as for instance an examined sample of German wools, although very thick, show but little or no medulla, even where they were abnormally thickened. Fig. 7 illustrates this.

Zigaya Wool.—Most wool from South Russia and Bessarabia, coming over Odessa or Roumania, is called Zigaya wool and structurally is entirely different from Zigarra wool, although they resemble each other externally.

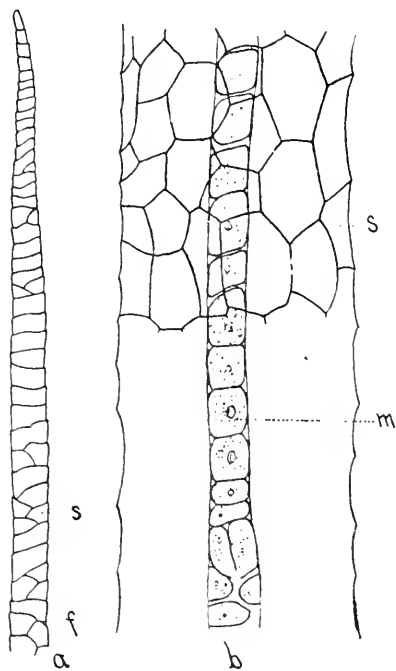


FIG. 8. Long Austrian wool. *a*, wool hair at apex; *b*, thick grannen hair; *c*, concave scales, *s*, central cylinder, *m*, and striations, *f*. $\times 350$.

The fine wool hairs can easily be distinguished from the coarse grannen hairs. The latter are very long, glossy and only dull at the tip. At the tip, which is 85μ wide, is found the large medullary channel (45μ wide) which is composed of rounded cells, that contain much granular matter. Only a few centimeters below the cut off tip can we first see the plated epithelium which consists of almost isodiametric, mostly five-angled, elements with thickened edges. The large medullary cylinder is about half as wide as the hair. The epidermal cells are distinctly concave. At the

base the structure of the hair is similar to that of the middle save that the thickness ($75\ \mu$) is somewhat less. But about one centimeter above the base the medullary cylinder disappears, here the fiber is $45\ \mu$ thick, the scales become more transverse, without becoming distinctly imbricate.

Ordinary Bohemian Domestic Wool.—A reported not cultivated sort consists of 4 to 5 cm. long, 30 to $40\ \mu$ thick, uniformly coarsely sinuous wool hairs, entirely with a medulla. The epiderm consists of half to entirely cylindrical strongly transverse cells, with a smooth not indented front edge, which is conspicuously thickened. The wool fibers are not circular, very unevenly thick, the edge is irregularly and sharply serrate. The fibrous sheath is regular, and straight coarsely striate.

These descriptions must suffice to show in which ways the different sheep wools vary in their microscopical characters. Of course all transitional forms that can be imagined may occur among those described.

Taken collectively the following deductions may be made concerning the microscopical characters of sheep's wool :

Length 2 to 50 cm., entirely straight to finely curled or spiral, regularly to irregularly curly. Lustreless to glossy, $5\ \mu$ to over $100\ \mu$ thick. With or without medulla and medullary isles. Medulla if present may consist of 1 to 4 rows of cells. These cells are round or long to linear, seldom broader than high and always containing fine granular masses and air. The medullary cells are never entirely regular in arrangement. Medullary strand very narrow or occupying four-fifths the thickness of fiber. Fibrous sheath very thin or occupying the whole breadth of fiber, hardly striate to irregularly or regularly fine to coarsely striate. Epiderm may consist of flat to concave, isodiametric to elongated or transversely broader, often half to entirely cylindrical scales which either are arranged as plates or are more or less distinctly imbricate. The front edge of the scales is generally distinctly thickened and very refractive, usually smooth but often drawn out so as to become toothed or (seldom) frayed dentate. The natural tip is generally lacking for they are only present in the first shearing, Lamb wools, and are therefore called lamp-tips. Fig. 8, *a*, represents one. They generally have imbricated half to entirely cylindrical scales, no medulla, and are striate, due to the fibrous cells.

The roots and bulbs are not present for the wool is not plucked but shorn. Only the so-called Tanners' wool, which is obtained by treating the skin with slaked lime, and skin wool, and *sterbling's wolle*, dead wools which are obtained from drawn-off hides, and from deceased animals by pulling out the hairs, show the presence of bulbs which are easily recognized by their light color and oval form.

Wool which was removed from the hide by means of lime is recognized by its brittleness, microscopically by its lack of oil, and is filled with air.

Sheep's wool is usually always white, seldom gray-brown to black. In

this way it differs much from the hairs of the Camel, Llama, Alpaca and Vicuñas which are always gray to red-brown. The various yellow-gray, brown and black natural colors of hairs and wools are in the first place much less affected by acids and alkalies, and secondly distributed entirely differently in the fiber than the artificially applied dyes.

The natural pigment is in the granules contained in the fibrous portion and medullary cells. In the medullary cells the granules are massed, but are arranged in longitudinal rows in the fibers. The walls are colorless if the fibers are but slightly pigmented. On the other hand, dark-colored hairs have the cell walls impregnated with coloring matter, whereas artificially dyed hairs have the cell walls evenly colored. For that reason the lumen of the elements of artificially colored hairs becomes indistinct, whereas in natural-colored hairs only the pigment will reveal it,

For this reason natural pigmented wools will present a striate appearance due to the arrangement of the granules. Artificially dyed wool never will.

(To be Continued.)

Dispensing Capsules in Dry Form.

BY CHAS. A. LOTZ, PH.G., 1900.

The method of massing drugs preparatory to filling in capsules, is gradually going into disuse. Many of our doctors insist upon capsules being made up of the dry powder.

This is generally very convenient, as in the case of

R. Quininae Sulphas	5j.
Pulvis Ext. Nucis Vomicae	gr. x.
Salolum	5j.
Phenacetine	5j.

Misce et divide capsule No. xxiv.

To mass this it requires some work and patience, whereas, if you triturate the ingredients well and ascertain how many grains will be contained in each capsule, you can select the proper size of capsule, and, conveniently hanging your delicate scale, balance it on one side with the required size capsule and weight, and then proceed to fill your capsule with the dry powder, weighing each one after filling. After a little while you get the "knack" of it and it becomes a pleasure.

The second reason is the rapid disintegration with which the capsule meets after reaching the patient's stomach, and gives a quicker effect than if it was a hard mass which would have to be dissolved.

Of course, many drugs cannot be put up in dry form; one which recently came to my notice was Ichthyol, to be put up in capsules; the easiest way out of it was to add Powd. Althea q.s. to make a convenient mass.

Then, again, we have solid extracts, and unless you have powdered extracts on hand, these will have to be massed.

Book Reviews.

Anatomischer Atlas der Pharmakognosie und Nahrungsmittelkunde. Von DR. A. TSCHIRCH, Professor der Pharmakognosie und Director des Pharmazeut. Institutes der Universität Bern. and D. O. OESTERLE, Privatdozent der Pharmakognosie an der Universität Bern. Lieferung 16, 17. (Schluss.) Chr. Hermann Jauchnitz, Leipzig. G. E. Stechert, 9 E. 16th Street, New York.

Anleitung zur mikroskopischen Untersuchung der vegetabilischen Nahrungs und Genussmittel. Von Dr. A. F. W. SCHIMPER, a. ä., Professor der Botanik aus der Universität Basel, Zweite Auflage. Gustave Fischer, Jena. G. E. Stechert, 9 E. 16th Street, New York.

Die mikroskopische Analyse der Drogenpulver. Ein Atlas für Apotheker, Drogisten und Studierende der Pharmacie. Von Dr. LUDWIG KOCH, a. o. Professor der Botanik an der Universität Heidelberg. Quarto in parts. Part 1, Barks and Woods, Gebrüder Borntraeger, Berlin. G. E. Stechert, 9 E. 16th Street, New York.

Lehrbuch der technischen Mikroskopie. Bearbeitet von Dr. T. F. HAN AUSEK, K. K. Professor, emer. Inspektor an der K. K. allgemeinen Untersuchungsanstalt für Lebensmittel und Gebrauchsgegenstände in Wien, etc. Ferdinand Enke, Stuttgart.

Die Rohstoffe des Pflanzenreiches versuch einer technischen Rohstofflehre des Pflanzenreiches. Von Dr. JULIUS WIESNER. Zweite Auflage, Erster Band, Wilhelm Engelmann, Leipzig.

During the past year five important contributions to the technical side of plant life have been given out by German publishers. They make truly an imposing array. One is just completed, another just begun, two are second editions, the fifth fills a gap in our general literature, heretofore only covered here and there in isolated monographs. These five have been here grouped together for general mention. Some are so well known that reviews are unnecessary.

Throughout all of them the lesson is evident that the microscope is playing a more and more important rôle in technical science, and perfection in its use a greater desideratum in the means for obtaining a livelihood.

It is to be greatly regretted that Tschirch's atlas is brought to a close. Its careful and thorough presentation of the gross as well as microscopic detail of drug structures, brought out by excellent descriptions and by still more excellent illustrations has made the book an impulse to better work and a delight. Its authors are to be congratulated on giving the student of applied microscopical science, such a trustworthy and excellent guide.

In this the last two *lieferungen* Belladonna, root and leaf, Cubebs, Strophanthus, Kola and Aspidium are considered. Certain addenda are included and a complete index of the whole work. It will remain a classic for years.

While Koch's work on the microscopical analysis of drug powders will prove very interesting and suggestive we do not believe it can ever occupy the high place taken by Tschirch's "Atlas."

The author purposes publishing a complete list of powdered drugs, illustrated with full-sized plates, three quarto parts have now been issued. After a general introduction of the methods of analysis of powders, mode of examination and preparation, reagents, etc., the characteristics of bark are taken up in much detail and there then follow a series of analytical tables in which a number of powdered drugs are distinguished. There are considered in the first volume, *Cortex auranti*, *Cascarilla* and *Cinchona rubra*. The descriptive text is almost too complicated for use—the analytical keys being somewhat cumbersome. The illustrations are excellent and taken as a whole the book is a splendid addition to our literature on the subject.

Of Schimper's second edition it may be said that it is rewritten and enlarged and is one of the very best of the shorter descriptive works on the microscopical examination of the vegetable foods, spices, etc. We commend it heartily even to those of our readers who may have the first edition.

Hanausek's Text-book is entitled to more than passing mention. Since the appearance of Wiesner's "Introduction to Technical Microscopy," published in 1867, no complete work of the kind has appeared. If we except Carpenter's work on the "Microscope," which is a much more heterogeneous piece of work, there is nothing in the literature of any country that so adequately fills the gap as this present work of Hanausek's. It is an *Index rerum* of the natural products used in technical manufactures and merits a wide distribution.

Wiesner's Rohstoffe has been a classical work of reference for so many years that the younger generation of workers are to be congratulated on having such an excellent work brought up to date. It has been entirely rewritten and fully illustrated. Such a work should have been in English form years ago. It is to be hoped that the public demand for it would stimulate the wary publisher into putting it into English dress.

S. E. J.

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A MONTHLY JOURNAL DEVOTED TO THE ADVANCES MADE IN THE VARIOUS DEPARTMENTS OF
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Original Contributions, Exchanges, Books for Review and Editorial Communications:
Address HARRY B. FERGUSON, PH.D., 115 West 68th Street, New York City.

EDITED BY HARRY B. FERGUSON, PH.D.,

WITH THE COLLABORATION OF

CHAS. RICE, PH.D. H. H. RUSBY, M.D. V. COBLENTZ, PH.D. GEO. A. FERGUSON, PH.B.
GEO. C. DIEKMAN, M.D. JOHN OEHLER, PH.G. SMITH ELY JELLIFFE, M.D., PH.D.

An Apology.

The Editor and Manager desires at this time to apologize to the readers and advertisers for the late appearance of the JOURNAL.

We assure you that we feel our situation keenly and while we have plenty of good matter for publication, its delay has been caused by a series of unavoidable accidents in the way of publication.

We hope we may share your indulgence for a short time longer to enable us to catch up.

Notice.

Attention is called to the fact that on and after January 1, 1901, the Board of Pharmacy, as created by Chapter 667, Article XI, Sections 190 to 201, inclusive, entitled "An act to amend the public-health law and the acts amendatory thereof, in relation to pharmacy, and repealing certain sections thereof," can recognize for registration only those persons who appear before it for examination. College diplomas will, therefore, not be accepted. See that you are registered at once (if not already registered) by the present Board of Pharmacy of the City of New York, if you hold a diploma that is now recognized. *The N. Y. C. P. diploma is recognized.* This will entitle you to practice within the jurisdiction of the present Board of Pharmacy of the City of New York (*i. e.*, Greater New York) without further examination.

Alumni, College and Class Notes.

CONTRIBUTORS.

Alumni Association,	WM. A. HOBURG, Jr., Ph.G., 115 West 68th St., N. Y.
Alumni Notes, Socials, etc., and Classes prior to 1893, . . .	CHAS. S. ERB, 121 Amsterdam Ave., N. Y.
Bibliography,	ADOLPH HENNING, Ph.G., 68 William St., N. Y.
Class '93,	EUGENE F. LOHR, Ph.G., 508 Marcy Ave., Brooklyn, N. Y.
Class '94,	FRANK N. POND, 226 Ninth Ave., N. Y.
Class '95,	GEO. J. DURR, Ph.G., Randalls Island, N. Y.
Class '96,	CHAS. G. H. GERKEN, Phar.D, 169 S. 4th St., Brooklyn, N. Y.
Class '97,	E. A. MEINECKE, Ph.G., 14 Platt St., N. Y.
Class '98,	T. BRUCE FURNIVAL, Ph.G., 115 West 68th St., N. Y.
Class '99,	THEODORE E. MEYERS, Dorranceton, Pa.
Class 1900,	ROBERT B. LIVINGSTON, 115 West 68th St., N. Y.
Class 1901,	ABERT E. SCHWALLIE, 115 West 68th St., N. Y.
Post Grad. 1900,	FANNY A. BLAN, Phar.D., 115 West 68th St., N. Y.
Post Grad. 1901,	THEODORE F. ENDRESS, '00, 115 West 68th St., N. Y.
Legal Notes,	H. A. HEROLD, Ph.G., 103 Fulton St., N. Y.
κψ Frat.	ABERT C. THOMPSON, 115 West 68th St., N. Y.
φχ Frat.	MELVIN WOLK, Ph.G., 115 West 68th St., N. Y.

'94 Notes.

(L.) Lennig is now the proprietor of the commodious Pharmacy, 76th Street and Lexington Avenue, N. Y. City, formerly owned by M. H. Smith. A new steel ceiling and other improvements show that he is abreast of the times.

It is reported that Worthman has written a prescription—Kirk got it—patient still lives—Quad Erat Demonstratum.

Prior is credited in a recent issue of the *World* with a long endorsement of "grape nuts" as a panacea for many ills. Prior always did like fruit anyway.

Kussy—our class orator and valedictorian has forsaken the mortar and pestle and now has a flourishing dental practice in Newark, N. J. We wish Dr. Joseph the fullest success in his new calling.

John Young, for some years past in the prescription department of Eimer & Amend's, has left for Baltimore this fall to take a course in medicine.

Frank J. Herbig—"the kid," has a store of his own now at College Point, Long Island.

Ludwig G. Erb is now proprietor of the Erb Pharmacal Co. Among other specialties are "Erborol" and Health Capsules—Oh, the medicine man!

20^x 40^x 67^x 87^x 107^x 127^x 147^x 176^x 196^x 215^x. Total 215 pins—Pond's score at last meeting of Retail Druggist Bowling Association.

The class dinner on Thanksgiving eve promises to be a jolly affair, several '94 boys on Committee. Every one should be present. F. N. P.

'97 Notes.

Freddy Schlotterbeck, who has been with A. A. Edlich, First Avenue, corner 50th Street, City, for the past year, as head R clerk, will soon become a benedict, it is rumored. Our very best wishes attend you, old fellow, if this be the case.

Our class "Languager," according to the Weber and Field code, Bagley, who has been located at Greenwood, S. C., for some time, became the proud father of a future heir to the glorious house of Bagley, B. himself being the senior of one of the oldest families in Mississippi.

His grace from Sangerties, N. Y., Wilbur, our Vice-President, paid me a visit recently. He has been in ill health of late and, consequently, not in active business. He has been spending the summer in the Catskill Mountains and expects to spend the winter in Washington, D. C.

Lippman, Buckle, Becker and Zucker are all taking a course in medicine at the Cornell Medical College ; quite a bunch from one class, showing as ever that our boys are ever ambitious.

E. A. M.

'00 Notes.

Möhlwitz and Schenck have anchored in White Plains.

Well, boys, Wilson is taking a special course in milk analysis—looks little suspicious. Don't you think so?

Not long ago Goodale was discussing the value of a Jersey cow and was quoting the sale of one for \$60. A young lady was attentive to the conversation and immediately broke in and said : " In the city a Jersey can be purchased for \$3."

Should any of the members of '00 possess any news or jottings, kindly communicate with Theodore F. Endress and face value will be guaranteed.

" Bob Livingston, be you alive?"

With pleasure I inform the boys of '00 that John Helmecke has successfully undergone an operation for appendicitis and is fast convalescing.

Paisley has returned from Canada and is going to locate in the city.

Green took a quiet skip to the South, where " that " color never fades.

Henry Klingler is with Schneider in the Bronx.

P. G. '01 Notes.

No, it is not May personally, who makes so much noise, but the loud h— he wears. Reiddy Zahn is an apt pupil in gravimetric magic.

Pundt is an expert in talking rag time. It is comical to hear him " talk his mouth out."

Now, Kaliski, we all know you are good looking, but Hepburn apparently is the favored one.

" The Virtues of Hops are Multifold."—Schmidt.

Seel a van, a suggestive business name.

Fish stories have been put in the shade by the foot-ball stories told by " George Morse " and " Lanky Hep."

Stern, take a friend's advice and do not " touch " Pundt.

Miss Rabinowich intends to treat the boys to an " afternoon " tea some " evening " in the near future. " Are we going boys?" One voice, " Well, I guess!"

What is the meaning of " Doctoring "?

'01 Notes.

Wishing one and all a happy and prosperous year, shall be the first act of our administration.

The result of the election held by Senior class was as follows : President, Whipple ; Vice-President, Bradley ; Secretary, B——— ; Treasurer, VerNoy.

Our esteemed ex-associate reporter, F. K. Schmidt, Phar. D.(?) has accepted a position to translate definitions, from German scientific works.

Cole, upon being asked the other day why he was so solemn replied, " Why, father had 500 pounds of moth balls destroyed by moths the other day."

Some of the students who were afraid of a flood of money in case of Bryan's election are paying their tuition on the installment plan.

A great many of the Seniors who marched in the Sound Money parade were soaked through and through—others were soaked only on the outside.

The way in which some of the boys kept shy of the camera would lead one to sus-

pect that they were wanted or more probably they thought it would be more profitable for each to sell his picture separately than for the photographer to sell them with the group, but most probably they had consideration for the man behind the gun who looked like a poor fellow.

There are any amount of fellows in the class of '01 who could tell of *at least one* person who would make a far better President than the present one if their modesty would permit. I tell you, says one student, "The tendency of this college is to a higherplane of education," as he trudged from basement to Chemical Laboratory.

S.

KΨ Notes.

The interest, taken by the members of this chapter in KΨ, exceeds that of last year. We are breaking the records for initiations. The Juniors are becoming interested and are beginning to fill our ranks. Let the good work go on.

Geo. Morse, Teddy Endress and Sleepy Zahn are still with us.

All of our passive are cordially invited to inspect our new Chapter Room at 125 Amsterdam Ave., near the corner of 65th St.

Drs. Diekman and H. B. Ferguson attended one of our late meetings and reported a good time. (Hübener says. "Had I known they were coming over I would have had my initiation postponed one week.")

L. B. Decker has purchased a Catskill, N. Y., drug store and will at once proceed to make his fortune. Good luck to you "Deck."

Grand Alpha Smith was a guest of Gamma Chapter the eve of November 15th. Mr. Smith is as hale and hearty as ever and reports great progress in KΨ for the past year. He also gave us some very good tips by which we may all profit.

Mr. Plummer, our "gas-man," has evidently been misinformed regarding the gang he is up against when he starts to play his funeral dirges on the organ, "What go' yo' do dat? We'uns wants Rag-time we does."

If any of the members have anything in the line of notes for the JOURNAL kindly hand them to your reporter, who will make good use of them.

A. C. T.

The

Journal of Pharmacology

EDITED BY THE ALUMNI ASSOCIATION OF THE
COLLEGE OF PHARMACY OF THE CITY OF NEW YORK

CONTENTS

Animal Wools and Hairs	223
SMITH ELY JELLIFFE, M.D., PH.D.	
ERNESTINE MOLWITZ, PHAR.D.	
Small Checks Not Good	238
The Botanical Origin of Coca Leaves	239
H. H. RUSBY, M.D.	



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VOL. VII.

OCTOBER, 1900.

No. 10.

Animal Wools and Hairs.*

BY SMITH ELY JELLIFFE, M.D., PH.D., and ERNESTINE MOLWITZ, PHAR.D.

Contribution from the Microscopical Laboratory of the College of
Pharmacy of the City of New York.

(Continued from page 216).

EXAMINATION OF WOVEN AND SPUN FABRICS.

The microscopical examination of woven and spun fabrics has not only for its object the qualitative determination of the fibers which constitute it, but also by counting alone, or counting and measuring (taking into consideration certain points yet to be described) to determine approximately the quantitative composition of the same.

Concerning the qualitative examination, usually there are not only but few fibers to be taken into consideration, but there are also only four or five sorts represented. Instances where more occur are rare. As a rule cotton, linen, hemp, jute, china, glass, sheep's wool, goat's hair, cow's hair, Angora, alpaca, vicugna, llama wool, real and Sussa silk alone are to be taken into consideration. But cosmos and shoddy are to be considered when examining woolen goods.

For examination a square about 2 to 3 cm. in size should be taken and

* Translated and arranged from "Der Mikroskopie der technisch verwendeten Faserstoffe." By Franz Ritter von Höhnelt.

separated into its woof and warp threads. The sample must be of such a size that it contains all the kinds of yarn or thread fibers used in its manufacture. When the sample is coarse the piece will often be quite large. Warp and woof threads are now placed side by side, one of each kind is chosen and further examined. In simplest cases there will be but one kind of woof and warp threads present therefore requiring the examination of but two fibers.

In more complicated cases there may be ten and more different kinds of yarns to be analyzed. In woollen goods (also in other cases) threads are not infrequently found which consist of two or three twisted yarn threads. These must be untwisted and each thread must be examined separately. Whoever desires to examine fabrics must be sufficiently proficient so as to be able to recognize the fibers about to be examined with a moderately low power (30 to 60 diameters). It does not suffice to be able to recognize them when magnified 200 to 300 times, for this high power is not applicable when examining weaves in which there are hundreds or thousands of fibers to be examined. It is necessary to view ten to twenty fibers at one time and be able to recognize them, in order to make the examination with sufficient rapidity. It is indeed easier to recognize the fibers with a high power but the general oversight is lost, and it easily happens that entire bundles of fibers are overlooked.

If when using the low power one fiber cannot be determined, the objective can easily be changed and the fiber examined and recognized with the higher power, then continuing the examination with the low power.

It will not be necessary to previously prepare the fabric or to separate fibers chemically if thoroughly familiar with the fibers, but microscopical tests are often desired and advisable notwithstanding.

If, for instance, it is desired to determine rapidly and positively whether some cotton fibers are present in a sample of woollen goods, warm the sample for a short while in dilute potash lye, wash it, and examine it with a very low power. The sheep's wool hairs (in fact, all animal fibers) will have become transparent, greatly swelled and distended, whereas vegetable fibers will be sharply outlined, very refractive and hardly swelled.

Darkly dyed fabrics often consist chiefly of threads which, when examined microscopically, will appear opaque, very dark and structureless. It is then necessary to remove the dye, which can easily be accomplished by boiling the threads with acetic acid, sulphuric acid, dilute alkalis, potassium carbonate, etc.

When making a more thorough examination proceed in such a way that each thread is examined separately, note the number of fibers of which it consists, and the color and kind of fiber.

In testing one sample four different kinds of warp threads and one wool

thread were obtained. One of the warp threads was twisted, consisting of two yarns, one of which, K_a , was black, and the other, K_b , white. Two warp threads, K_2 , K_3 , were dark blue and the fourth, K_4 , was mixed gray. The wool was blue.

The examination gave the following results :

K_a 85 shoddy threads (most black, but also some red-yellow and a few green sheep's wool threads and 13 cotton threads).

K_b 31 pure white sheep's wool threads.

K_2 and K_3 pure blue sheep's wool threads, respectively 46 and 53.

K_4 60 shoddy threads, 32 of which were chiefly gray or black sheep's wool threads and 28 gray cotton threads.

E 60 blue sheep's wool threads.

Therefore in one piece of this sample which consisted of four woof and four warp threads were found $85 + 31 + 46 + 53 + 60 = 275$ single warp fibers, and $4 \times 60 = 240$ woof fibers ; together 515 single fibers, of which $13 + 28 = 41$ were cotton and were found entirely among the shoddy, which embraced $85 + 60 = 145$ fibers. This square sample contains woof and warp threads of equal length consisting of 41 cotton threads, 104 shoddy sheep's wool threads, and 370 pure sheep's wool threads, from which their respective per cents. may easily be calculated. Naturally the percentage of the number of fibers only is secured in this manner. If it is desirable to ascertain their relative weights, microscopical determinations must be made. If by means of numerous measurements the average thickness of the cotton and woolen fibers in the sample has been ascertained, then taking into consideration the circumstances, that a sheep's wool fiber with same diameter as the greatest one of a cotton fiber will have a surface on cross section that is twice as great as that of the latter—for cotton is always greatly flattened—it will be easy to calculate their proportion by means of which the per cent. of weights may be obtained. It has of course been assumed that the specific weight of sheep's wool is the same as that of cotton. Furthermore, no allowance is made for the dye and mordant of the fibers.

Let s be the diameter of the sheep's wool and b that of cotton, then the ratio of the cross section will be for the present,

$$S^2 : \frac{b^2}{2} = \frac{2s^2}{b^2} : 1.$$

Multiplying the size obtained above for the number of threads in the sheep's wool by $2s^2/b^2$ the relative weight of sheep's wool and cotton is obtained for sheep's wool is, owing to the fact that its cross section is twice as great as cotton, heavier than the latter.

For example, if a sample has the same number of equally thick threads of cotton and sheep's wool, then their relative per cents. for the number

of threads will be 50 per cent. Their relative weights on the other hand will be $B : S = 50 : 2 \times 50 : : 1 : 2$ 33.3 per cent. cotton and 66.6 per cent. sheep's wool.

Finally it is to be remarked that the same method of examination may be employed with other fibers. It is easy to deduct data from statements made in their respective places, concerning the shapes of the cross sections of the fibers. But in no instance is the question so important as in case of cotton and sheep's wool and for this reason it has been discussed in detail.

MICROSCOPICAL EXAMINATION OF SHODDY (ARTIFICIAL WOOL, ALPACA, MUNGO, EXTRACT.)

The reproduction of woolen fibers, that can be spun, from woolen rags, an industry which had its origin in England about 1845, has become so universal on the Continent and in America that about 33 per cent. of fabricated wool is artificial wool. In fact, in all countries of Europe there are shoddy factories whose yearly output amounts to about 150–200 million kilograms. As sheep's wool is four to six times more expensive than rag wool, it becomes evident that not only all the cheaper woolen fabrics contain shoddy, but that some fabrics whose prices would admit the presence of real wool only, are more or less adulterated with it.

Grothe* found, after examining numerous samples of carded yarns, that but 15 per cent. of these were free from mungo. Hundreds of English and Brüner fabrics examined by v. Höhnel showed the exceedingly frequent occurrence of shoddy in fabrics.

As in the case of sheep's wool, there are many grades of artificial wools, and it is necessary for several reasons to mention them.

This artificial wool is classed as shoddy, alpaca and mungo.

Shoddy is obtained from pure unfulled (unmilled) sheep's woolen fabrics; also from pure (sheep's) woolen worked and knitted materials (tricot), and finally from materials that have not been shorn (for instance llama). The fiber is usually pure and over 2 cm. long.

Alpaca, sometimes called extract, is obtained from the same fabrics (rags) if they also contain vegetable fibers. The latter can only be removed by a carbonizing process invented by Kober. By this process the rags are treated with sulfuric acid 4 per cent., then dried in special drying ovens at 60° to 80° C.; the vegetable fibers are then destroyed and can be easily removed by beating the material, whereas the firmness of the sheep's wool is hardly affected. The excess of acid must be removed by soda and thorough washing. Usually over 2 cm. in length.

Mungo (origin: it must go; it mun go) is obtained from pure or impure cloths (fulled). The fiber is short, about 5–20 mm. long.

* Zeitschrift der Wollinteressenten Deutschlands, 1875.

Several factories distinguish between several sorts thus, for example :

1. Shoddy or thibet (from rags of best wools, long-fibered).
2. Flannel (from white flannel).
3. Mungo (from fulled fabrics).
4. Knitted wools (from tricots).
5. Alpaca (from half-wool rags).
6. Damask (from upholstery goods).
7. Merino (from merino wool fabrics).

In Brunn distinctions are made between old cloth mungo, new cloth mungo, soft wool shoddy (from carded yarn materials), thibet, alpaca (extract) (from unfulled), alpaca II (from fulled cloths).

Practice and exactness are prerequisites when examining yarns and fabrics (tricots, etc.) microscopically for shoddy. This is one of the most interesting problems of technical microscopy, also one of the most delicate as well as difficult operations.

It cannot be seen on every fiber whether it is shoddy or not, and not one feature will suffice but several collectively are required to be able to recognize the presence of artificial wool in a fabric.

It is not necessary to examine in order the most important items to be considered for the detection of shoddy, but the following are of paramount interest.

1. *Foreign Fibers*.—Pure sheep's wool fabrics consist of but one kind of fibers. Fabrics of a more expensive sort, which for that reason are made of better wools, should reveal an even thickness of the single threads. In no case may, for instance, a zackel wool hair be found next to a doubtful merino fiber, so, in other words, all fibers present ought to be of such a nature that they can be classed into one sort or some allied sorts. Variations in their thickness may furnish a clue as regards the quality and value of the fabric, but will not furnish an indisputable result for the determination of the presence of shoddy ; for, as has been stated, the same fleece may consist of two kinds of hairs, or the yarn might have been spun from different kinds of pure wools.

According to C. Cramer,* the thickness of hairs on one and the same sheep may vary from 12 to 85 μ .

It is remarkable that some even very good wools will show the presence of stichel hairs (stiff, sharp, short hairs which chiefly grow on the extremities of sheep), these probably having come in at the shearing. The latter as well as the presence of single grannen hairs (here called dog's hairs), which are difficult to remove, have often been misleading and given rise to the idea that a coarse mixture had occurred. But the presence of these stichel and dog's hairs is exceptional, yet the possibility of their presence must be remembered, as well as the presence of a large number of coarse grannen among the fine wool hairs.

* Programm des Zurich Polytechnikums, 1881, p. 12.

Vegetable fibers may also be found in pure wools, up to one-half per cent. It is possible to detect even a trace of vegetable fibers by boiling the whole fabric in a clean test-tube with a slightly concentrated solution of clear sodium hydrate, until the wool has been dissolved; filter the fluid through a fine wire gauze and examine the residue. By this process the residue will consist of plant fibers and have changed so little that it will be easy to recognize cotton, jute, flax, etc.

Sheep's wool often contains an enormous amount of so-called *burs*. By these are meant the spiny and prickly fruits of the *Xanthium* and *Medicago* species, as well as the small fruits of *Galium Aparine*, *Bidens*, etc. The South American wools especially are often bur wools and are loaded with the fruits of the various *Medicago* species. These can only be removed with great difficulty, in fact not entirely, and are therefore apt to be present in the fabric.

C. Cramer proved that in cloths, parts (for instance, vessels, bast fibers, spines) of these *Medicago* spines are to be found. In the fabrication of the wools the burs have been partially destroyed (partly mechanically or partly by carbonization), and the resistant nerves (vascular bundles) get into the yarns. The destruction of the burs may have started on the animal itself, provided the wool has not been shorn too soon. This will explain the frequent occurrence of short fibers, vascular bundles, and the like in fabrics.

It is hardly necessary to state that now and then other vegetable tissues and plant parts are found in wools and fabrics; for instance, wood, moss, cotton, etc.

It is important to remember that the vegetable fibers of artificial wools as a rule have been removed by carbonization. But the absence of cotton, flax, etc., does not serve as a criterion of shoddy.

But if a certain fabric, cotton (always colored) or cosmos fibers are found to the extent of several per cent., this would positively indicate that shoddy (artificial wool) was present, for it would not be likely that pure sheep's wool would be adulterated directly with cotton fibers. This can only occur by means of artificial wool. But it is to be taken into consideration that more than traces of dyed cotton must be present. Undyed cotton if not present in noticeable quantities need not be regarded with suspicion.

2. The length of the fiber is only in individual cases of assistance in determining the presence of shoddy. Even the best shoddy is shorter than natural sheep's wool. But sheep's wool is only found approaching its real length in good card yarns as well as in unshorn materials and tricots. It is only possible to determine this (the length) with some accuracy in the case of card yarns by carefully separating and then untwisting the netted yarn-threads. It is more difficult, even impossible, to do this if the texture is coarse. Also difficult in the case of tricots. Much teasing of fibers oc-

curs in the fulling and if the cloth is shorn many wool fibers, especially if the material is thin, are cut. Added to this is the fact that often clippings from cloth shearing are fulled (milled) into cloths in order to improve the surface of the felt and to increase its weight. Such materials then contain numerous threads .5 to 1 cm. in length, which may not be termed mungo. Furthermore, it is difficult and a waste of time to accurately determine their length and then too natural wools vary in length from 2.5 to 50 cm. and more. Some artificial wools are longer than many real wools.

An addition of very short fibers can be ascertained by rubbing the sample with a stiff bristly brush. More than one-half per cent. of fibers will never fall from both sides if the sample was of good quality, but if there is a decided increase in this amount a more thorough examination is required. The brushings thus obtained will serve as good material for a closer histological and chemical examination as well as for dye, with reference to shoddy; for if shoddy is present in the fabric the brushings will chiefly consist of it, the fibers of shoddy being shorter and more wiry than real wool, and for this reason it will be easy to determine the properties of the shoddy from the former, which will be spoken of further on. It is well to state here that fulled cuttings generally have two sharply-cut surfaces.

3. Their thickness is, as has been stated (1), a feature not to be depended upon. The more uniform the threads of a woolen fabric are in thickness the easier it will be to look at it. Conspicuous (noticeable) uniformity in thickness of the separate threads in the same fabric occurs only in the case of finer wools, as the coarser (wools), on account of the occurrence of grannen hairs next to the finer wool hairs, are very unevenly sorted.

Only then when the thickness varies much and is associated with differences in the quality of the sheep's wool threads themselves may the presence of shoddy be inferred.

4. Histological characters of shoddy. Good sheep's wool nearly always shows a distinct epiderm which consists of diversely-formed scales, but, as already has been said, certain domestic wools lack the epiderm at their tip, whereas they otherwise show the normal structure. Therefore the absence of scales on fibers of sample cannot, on the whole, prove the presence of artificial wools, even if one-fourth to one-third of the coarser fibers have no scales. For it is a fact that many domestic wools, even on living animals, are without scales for quite a distance below the tips; this refers to the coarse and long grannen hairs only (which constitute the chief bulk of the domestic wools). The real wool hairs of the domestic sheep, which are outstripped and protected by the longer grannen hairs; and of the merinos, which are covered and pasted with fatty exudation, especially on the outer staple, are either never without scales, or they occur so seldom that

it is not noticeable. The reason for this is obvious. The very curly merino wools are not so easily deprived of the scales by rubbing as the more straight, strong and resisting (tenacious) domestic wools, which moreover possess no wool fat at the tips. The finer merino sheep are more carefully fed and kept, which tends to full development and preservation of the hair; this is not the case with the domestic breeds. The hairs of the latter are more separated (single) and free, and for this reason are apt to rub against each other; furthermore, the scales are usually flat, and therefore fall off more easily than the cylindrical or half-cylindrical and thicker scales of the merino wool hairs and others. A stiff hair without a medulla is more easily injured than a pliable, soft and elastic one.

From all this the conclusion may be drawn that in the case of finer wools the epiderm is but seldom if ever lacking, but coarse wools are often without it. Then if merino and other fine wool fibers are found without an epiderm it may be assumed that shoddy is present, whereas in the case of coarse wools this absence of epiderm would have no significance.

According to Rhode,* Körte† and C. Cramer‡ badly closed stables, neglect of the animal, poor diet, illness, influence of urine, snow, rain, dust, packing wool while moist, too rapid and frequent of moisture and cold, too warm or too alkaline washing of wool, washing with putrid urine, etc., are causes which may, even before the wool is used for manufacturing purposes, change the structure of the wool, partly loosen the epiderm, soften and split the ends, etc. Add to this the spinning, weaving, separating, fulling, acidulating, washing, etc., it will appear all the more evident that even good wools will at times show no epiderm.

Also other supposedly characteristic features of shoddy, as for instance thin places, irregularities in thickness can hardly be used for its recognition; for such features are frequently found in real wools and the more thorough examination of shoddy shows them not to be characteristic. Most kinds of shoddy, mungo and alpaca examined by the author showed, as regards the longitudinal structures, no difference from ordinary sheep's wool. For that reason he does not confirm the assertion that a chemical difference, that can be made use of, exists between the two wools.

It has been stated that shoddy is affected sooner than wool by soda and potash lye, that it swells up more quickly, and has been used as a clue to detect the former. Van Höhnelt has not found the existing difference to be of any use.

5. On the other hand, it is certain that the ends of shoddy threads are different from those of the genuine wools. In the production of artificial

* Beiträge zur Kenntniss des Vollhaares, p. 67.

† Das deutsche Merinoschaf seine Wolle, etc., p. 109, 155 ff.

‡ Programm, etc. (s. o.), p. 16.

wools the fibers are always torn. By far the greater number of the ends of rag wool fibers are formed by the tearing of the fibers ; such ends are less frequent in natural wools. While searching for this important clue great care must be exercised that the fibers are not torn while preparing the material for this examination. What these ends look like can be ascertained by tearing some fiber and viewing it with a microscope. The epiderm will be cleanly torn off and the medulla also that may have been present ; whereas the fibrous layer will be like a painter's brush. This may be distinctly seen after the fiber has swelled in HCl. If numerous or the most visible ends are torn it will be a sure indication that shoddy has been used, that is, if fibers are long ; if not then mungo. Shearings are always very short and generally sharply cut at both ends.

To quickly ascertain the presence of short hairs it is judicious to partly loosen and get them out of the fabric by beating or rubbing the goods with a stiff brush.

6. The dye is the most important clue for the detection of shoddy. In the fabrication the rags are first sorted out as shoddy, extract, mungo rags. Each one of these sorts is again sorted according to color. Many rags have but one color, but the most consist of variously dyed wools and the colors of the different rags are found in the most varying combinations.

The result is that but few samples of shoddy show one color only ; in fact, even samples of shoddy that seem to be purely white, red, green or yellow, often contain other colored threads. This is due merely to the fact that at present almost all fabrics have a pattern, so that we but seldom obtain purely one colored shoddy. If a red rag contains some single green threads, then red shoddy will be obtained from it, which will naturally be detected by the presence of the green threads. For this reason if a yarn thread which has a certain ground tone reveals some or numerous threads of an entirely different, often gaudy color, we can positively assert the presence of artificial wool.

The following circumstances must yet be considered :

First : If a fabric of yarn is of an undecided gray to brown or black or any other dirty color, and besides this contains threads of all colors, it will consist chiefly of artificial wool.

Second : If a sheep's-wool fabric has wool fibers mixed or twisted like a thread with cotton (dyed), or an entire or partial cotton warp, then much artificial wool is present.

Third : Sheep's-wool fabrics that contain cosmos are hardly ever, as regards animal fibers, made from pure wool.

Fourth : Shoddy yarns or threads are to be found more or less concealed within or on the wrong side of the fabrics. They are generally thicker, yet at the same time more apt to tear, and while being torn, cause dust to fly out from material (examine the dust), are more strongly twisted and

curled, therefore less smooth than the yarns of pure wool. Frequently also a fine but firm sheep's-wool yarn will be found twisted about a thicker shoddy thread.

Fifth : If the fibers which show different colors also differ much in thickness and histology then the presence of shoddy is more apparent.

Sixth : On the other hand, it is to be taken into consideration that if various yarns are found with macroscopically different colors it may easily be possible that each of the yarns may contain all of the colors, for threads from one yarn could easily get into a differently colored yarn during weaving and eventual fulling. In this case the foreign extraneous fibers will in the first place appear but seldom (and more on the outside of the yarn threads) and secondly it will be easy to prove that all the different-colored threads were obtained from the other yarns in the sample. They will then correspond in color, thickness and histology. Then too it must not be forgotten that often differently dyed wools are purposely mixed before spinning generally but two or three colors which usually harmonize. Therefore not orange and green, or yellow and blue, etc., but white and black, white and blue, etc. So purposely mixed yarn of but few decided colors would seldom be mistaken for artificial wool for the latter would reveal single fibers containing all the colors.

It may be said that silk, real and Sussa silk, is found woven or twisted with wool in woolen fabrics and also in fulled cloths. Therefore the presence of silk ought not, as has frequently been done, be used as an indication for the presence of shoddy. Fulled or similar materials having a colored pattern (design) printed on an off-colored, at the same time one-toned ground (printed shoddy), besides having a cotton warp, are purely shoddy fabrics. If in one material (especially in a thicker one) yarns differing much in thickness occur the stronger ones are suspiciously shoddy and to be examined for artificial wool.

Many fabrics, blue, black and other dyed one-color fabrics, are found which also when examined microscopically will reveal but one, even if differently shaded, color. There are also yellowish (naturally colored) flannels which, even when examined microscopically, could easily be considered pure sheep's woolens and yet partly consist of artificial wool. Such light almost white sorts are obtained from white and partly from bleached originally light-colored rags. In the first instance the color will sometimes furnish no clue; this is so in the case of undyed sheep's wool and then other characteristic features will have to be taken into consideration. If on the contrary the light color has been obtained by bleaching, a slight coloring if even but a shimmer (of green, red, etc.) will be observed in many fibers. But often the differently colored artificial wools are dyed a dark blue, black, etc., and this darkly-dyed material will greatly resemble dyed natural wools.

In this case it will become necessary to remove the added dye, which can easily be done by warming the sample with hydrochloric acid. The original color will again become entirely or partly apparent or it will be possible anyhow to ascertain the fact that the fibers had been redyed. When treated thus the dark blue, black, brown, etc., goods will assume all colors, proving that shoddy had been used in their composition.

The Quantitative Determination of Shoddy.

The quantitative determination of shoddy can only be accomplished by exact counting and eventual microscopic measurements.

All fibers of the separate yarn threads which have been recognized as shoddy are simply counted and their average is added to the other threads. On the whole figures are obtained which are smaller than the true ones, for many shoddy threads cannot be distinguished from genuine sheep's-wool threads.

The large number of fibers of the material prevents and hinders a more exact quantitative determination. As is easily calculated a medium thick sample, 2 to 3 cm. long, will contain 30,000 to 50,000 separate threads. Smaller samples with less threads offer no guarantee that they contain an average mixture of the fibers to be examined.

But there are two methods which lead to somewhat definite results. Either separate the sample into its yarn threads and these again into their separate fibers, of which a larger number (about 1,000) are examined and made note of, or brush the shortest fibers out of the cloth and examine these.

The first without doubt seems the more judicious method and it can be associated with all statements made concerning the examination of fabrics.

Cloth shearings which are often full in the felt surface of cloths, and are found in poor quality mungo, are generally but few millimeters in length (up to 1 cm.), sharp at ends, either cut straight or on the slant, are often flattened at the cut surface, due to the pressure of the shears. They frequently show many colors in the same sample.

Goat Hairs.

From goats (*Capra hircus*) four different kinds of commercial hairs are obtained: ordinary goat's hair, hair from the goat's beard, the so-called angora wool (mohair), and thibet wool.

Ordinary goat's hair (Fig. 9 *b*) is white, yellowish to brown, and black, generally 4-10 cm. long. It consists almost entirely of graffen hairs, which, being pulled, will usually show the bulb of the hairs; this is generally narrowed like a root or is clavate. The average hair shows the following structure: At the base it is about 80 to 90 μ thick, the root is

about one-third mm. in length. The medulla, which is very narrow at the root, increases rapidly in thickness and at but several mm. above the base, where the hair has a thickness of 80 to 90 μ , it will be 50 μ thick. For this reason the fibrous layer forms but a very thin cylinder. The cross section is round. The epiderm consists of scales 15 μ high, broader transversely, whose fore edge seems scarcely thickened, but distinctly outlined. The edge is not toothed, but unevenly sinuous. The fiber long retains this character, but increases to 100 μ in thickness, the medulla becoming 80 μ thick. The medullary cells are thick-walled, narrow and broader than high. Towards the middle the hairs again grow narrower and attain their greatest thickness just before the tip, measuring there about 130 μ . There the cortical layer is, relatively, narrowest—5 μ ; the

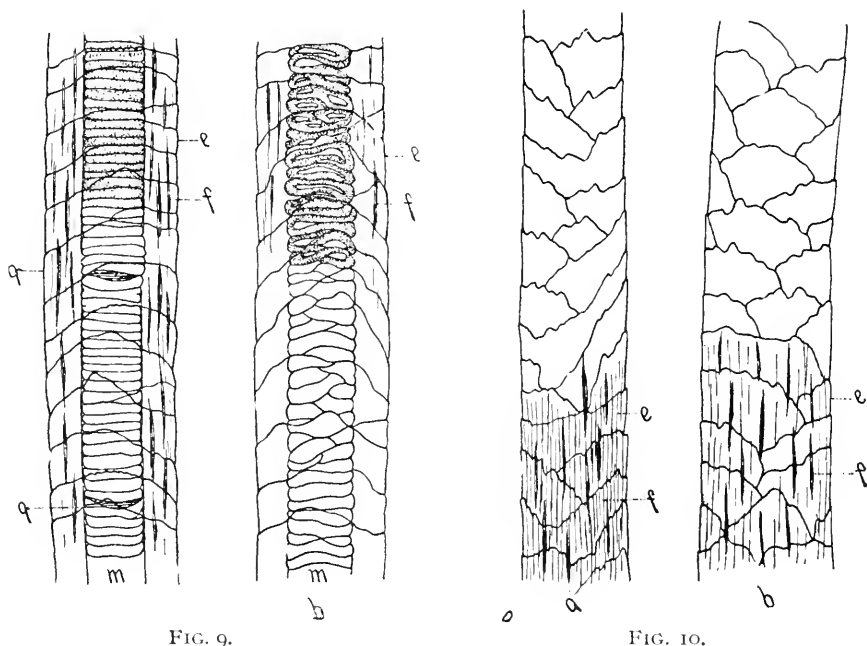


FIG. 9. The middle of two grannen hairs. *a*, cow's hair; *b*, goat's hair. In *a* are seen the characteristic transverse fissures *q* in the medulla *m*, which are filled with air. In *a* and *b* the fiber fissures are shown at *f* and the imbricated epidermal scale at *e*. 350.

FIG. 10. Mohair or Angora wool. Grannen hairs without medulla. Epidermal scales *e* are very thin, imbricated and a toothed front edge. The hairs are coarsely striated with large fissures *f*. *a*, first quality; *b*, inferior quality. 350.

medullary cylinder consists of six to ten rows of medullary cells, and the hair (partly due to liming, incineration) is very brittle and cracks easily. Towards the tip the medulla attenuates rapidly, the cylinder finally has but one row of long cells, medullary isles following this, and when the

hair is but 40μ thick it will have no medulla. At the very tapering tip the epidermal scales are jagged, toothed, and higher at the fore edge, and the fiber edge is finely serrate.

The pigment of the colored goat hair is seen in all the tissues. The medulla appears black, but this is caused by air and granules of pigment.

The hairs from the goat's beard are stiff grannen hairs, over 30 cm. in length. At the base they are 100μ in thickness, without a medulla; the epidermal cells are very narrow and finely toothed, closely imbricate, very thin, edge not thickened; for this reason the hair here will have no serrations at edge. Four to five scales cover the circumference; their uncovered portion is about 10μ high and 40 to 50μ broad. The fibers form a uniform and close, coarse striation. In the center of the cross section the fibers will be less close, and thus it often happens a medulla is found. Further up the hair first decreases (90 to 95μ), then increases (120μ) in thickness without changing its structure.

About 10 to 15 cm. above the base are first seen spindle-shaped medullary cells that often look like broad fibers only. They grow more numerous and gradually are transformed into somewhat long and round cells, that finally form a continuous medullary cylinder. Here the medullary cells are somewhat broader transversely, are arranged in several to four rows and finally form a massive cylinder which is only surrounded by a very thin fibrous layer and a scarcely visible epiderm.

The medullary strand generally reaches to the broken-off tip of the hair. The greatest width of this is about 150μ , 10μ of which go to the fibrous layer on either side. The entire fiber is very uniformly round.

3. *Angora Goat's Hair (Mohair).*

A prime sort, Fig. 10, *a*, consisted of hairs about 18 cm. in length, very evenly round and about 42μ in thickness at the cut base. The scales were very thin, entirely flat, half to entirely cylindrical, broader than high, often tapering, crenately or coarsely dentate, and here and there finely toothed, without a medulla, without a conspicuous fiber striation, entirely without granules; characteristic and conspicuous are the broad and evenly distributed fiber fissures. Irregularities in thickness of fiber are entirely lacking. Greatest breadth is 50μ , serrations at edge entirely lacking or are very fine and drawn out. Minimum thickness is 38μ . Towards the tip the scales become very fine, jaggedly toothed, finally entirely lacking. Coarse hairs with medulla are not present. Natural ends at tips.

A coarser sort, 48 to 67μ thick, is not uniform, at places not columnar (Fig. 10, *b*).

Cap-angora wool (like ordinary wool of *Capra hircus anga*) is 12 to

20 generally 15 cm. in length, slightly wavy, almost straight, very uniformly thin (35 to 50 μ) columnar and glossy like silk; is without a medulla, has a very thin and uniform epiderm whose cells seem to be somewhat lifted off at the tip, which can be observed at the edge. The fibrous cylinder is evenly, straightly striped and the individual fiber fissures are conspicuous. At the tip the epiderm is lacking for several millimeters. The edge of the epidermal scales is thin and finely toothed. A cross section will contain 1 to 3 cells. One to 2 cm. below the tip the scales will be found to be thicker, higher, with a slightly thickened edge, usually not straight, almost cylindrical; their front edge is not finely toothed, but has coarse notches and teeth. The entire fiber is free from granules.

Individual hairs 60 to 100 (also 150) μ thick possess a broad medullary cylinder and in structure resemble ordinary hairs of goats, but differ from these by their more uniform thickness and slenderness.

4. *Thibet Wool (Paschmina, Cashmere Wool).*

This is the fine wool hair of the *Capra hircus laniger*. Similar fine wools are obtained from other breeds of goats.

The bulk consists of wool hairs 13 to 26 μ thick, very symmetrical, almost columnar, coarsely curled and having a thick half to entirely cylindrical scaled epiderm.

The edge of the scales is slightly or not thickened. Within, the hairs are fibrous, coarsely striate and have characteristic fiber fissures; no medulla. Microscopically the entire fiber seems somewhat stiff. Length about 7 cm. The upper edge is about 7 μ thick, but the natural tips are seldom present. There are either no scales at the tip or they are so fine that they are scarcely noticeable. The fiber is exactly columnar, increasing rapidly from the usually broken-off tip to 26 μ in thickness; the scales are then finely toothed or may be drawn forward like a tooth. The edge of the fiber is either finely serrate, or also drawn forward like a tooth. The scales first become somewhat thickened further down. All scales are high.

A white down obtained from goats bred in south Russian steppes, and a light brown one from a Bohemian goat showed the same morphological properties as the real Paschmina. The Bohemian down only differed in color, inasmuch as many fibers contain more or less large quantities of red-brown pigment corpuscles. Bulbs are also found in it, but not in Paschmina. In Thibet wool, grannen hairs are found, more or less, which are white, 10-12 cm. long, and on the whole show the structure of the ordinary hairs of goats. At the base they are about 70-80 μ thick, without medulla, with narrow, almost cylindrical scales that are exceed-

ingly thin. But few millimeters above the base some single medulla isles will be found, consisting of simple longitudinal cells; the medullary cylinder will follow, which soon becomes very broad. The greatest thickness, about $200\ \mu$, will be found 1 cm. below the fine tip. At the thickest portion the fibrous layer will be but $13\ \mu$ in thickness and the thick-walled medulla cells will be in ten rows. They extend transversely.

5. Hairs of Cows and Calves.

These will always be incinerated, that is, treated with slaked lime, pull hairs. For this reason the hair bulbs will usually be present.

Calf hairs consist of three sorts of hairs, with some transitional forms (Fig. 11).

(a) The thick, stiff grannen hairs, 5 to 10 cm. in length, have a long and narrow bulb. The throat of the hair is equally long and reveals a one-rowed medullary cylinder, as well as medulla isles. The epidermal scales are very thin here, broader than high, notched and imbricated. The thickness of the throat is $120\ \mu$. The hairs increase slowly in thickness (to about $130\ \mu$), the medullary cylinder becomes broad and consists of narrow imbricated elements. The fibrous layer is finely striate. The epiderm can be seen with difficulty only, and has the same structure as at throat. The edge of fiber is smooth. The medulla cells are very thin-walled, with a large amount of finely granular contents. Towards the colorless tips of the hairs distinct fiber fissures appear. The epiderm remains very thin, closely scaled and finely toothed. Shortly before the tip the medullary cylinder disappears, the fissures become more distinct, whereas the epiderm undergoes no change.

Their difference from the goat grannen hairs is remarkable inasmuch as the medulla cells are in but one row, very thin-walled and the medulla often is in partitions caused by tearing, or larger round lumens filled with air are formed. The cells are always rich in fine granular contents.

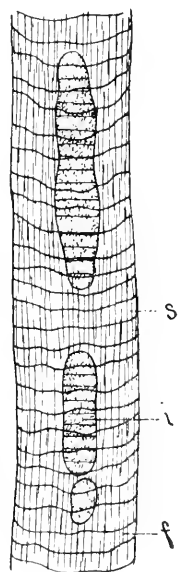


FIG. 11. The middle of a grannen hair from calf. It shows the thin-walled medullary cells which form the isles *i*, the coarsely striped fibrous layer *f*, and the narrow imbricated epidermal scales. 350.

(To be continued.)

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Original Contributions, Exchanges, Books for Review and Editorial Communications:
Address HARRY B. FERGUSON, PHAR.D., 115 West 68th Street, New York City.

EDITED BY HARRY B. FERGUSON, PHAR.D.,

WITH THE COLLABORATION OF

CHAS. RICE, PH.D. H. H. RUSBY, M.D. V. COBLENTZ, PH.D. GEO. A. FERGUSON, PH.B.
GEO. C. DIEKMAN, M.D. JOHN OEHLER, PH.G. SMITH ELY JELLIFFE, M.D., PH.D.

Small Checks Not Good.

Not everybody is aware that it is a criminal offense to circulate as money checks for a less sum than \$1. The attention of internal revenue officers is called to this fact by a circular from Robert Williams, Jr., acting United States commissioner of internal revenue, which has been received at the district office. The information is given in the form of a letter as follows:

"In a letter addressed to his office on the 13th inst., by Mr. C. S. Grayson of Luray, Page County, Va., he incloses an ordinary bank check, duly stamped, and inquires whether or not it is against the internal revenue law to use checks like the inclosed in business. He has to-day been referred to you.

"If, as is probably the case the use of checks of this kind which he has in view is that of circulation in lieu of money, you will call his attention to the fact that tax is imposed upon such circulation by section 3408 revised statutes, and that section 3853, revised statutes, makes it a criminal offense to issue checks for a less sum than \$1, intended to circulate as money or to be received or used in lieu of lawful money of the United States."

The Botanical Origin of Coca Leaves.*

By PROF. H. H. RUSBY, M.D.

This study is believed to establish the following facts :

1. That the Bolivian, Huanuco, Brazilian, most Venezuelan, Argentinian, and other leaves of that type, used commercially for the extraction of crystallizable cocaine, are specifically identical.

2. That the above leaves pertain to the species *Erythroxylon coca* Lamarck.

3. That the leaves known in the New York Market as "Truxillo leaves," and also known as "Java leaves," called *E. coca spruceanum*, by Burck, pertain to a different species from the above, and that, if this is not *E. hondense* H. B. K., it must be known as *E. Truxillense*, the name *E. spruceanum* being preoccupied.

4. That the leaf frequently spoken of in British journals as the "Truxillo leaf," and largely cultivated in British provinces, from plants derived from one mother-plant cultivated at Kew, and called by Morris, *E. coca nova-granatense*, is specifically distinct from both and is the *E. Carthagenense* Jacq.

It is very doubtful if any one ever wrote or approved a definition of "coca" without misgiving. The editors of the present British Pharmacopœia and their advisers found themselves obliged to face serious doubts and objections to their definition ("the leaves of *E. coca* Lamarck and its varieties"), both before and after its adoption. When the definition of the present edition of the United States Pharmacopœia was under discussion, there was hesitation about its adoption, and the present writer, who was largely concerned in its selection, sanctioned it only because it appeared to be the best thing that could be done in the then state of our knowledge. It has always been regarded as tentative and its correctness considered dubious. Every one who has followed the literature of this subject in our pharmaceutical journals must appreciate that there is great difference of opinion as to the relations of the cultivated varieties of this plant to one another, as well as to the wild species. The following important questions are at issue :

Are the cultivated varieties of the coca plant forms of one species, or do they represent several distinct species ?

Is there one or more wild species to which they can be referred ?

* Since the original publication of this paper, it has been learned that the author's too careful artist substituted the fruits of *E. Truxillense* for those of the original drawing. Finding these fruits growing in the conservatory, labeled *E. Coca*, and noting their differences from the figure, she concluded that the latter must be wrong and so "improved" it by the substitution. Such liberties are annoying and too common.

What is or are the proper botanical name or names?

I shall first attempt to answer questions two and three as applied to the cultivated Bolivian leaf ("*E. Bolivianum* Burck"), first anticipating question No. 1 so far as to express the opinion that there is no ground for as-



FIG. 1. *Erythroxylon Coca* Lamarck. (After Cavanilles.)

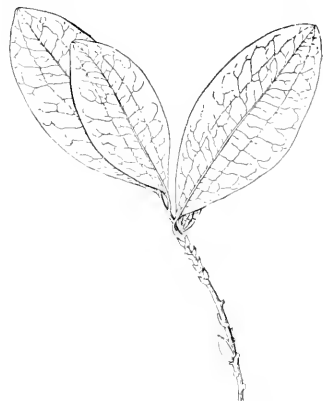


FIG. 2. Typical cultivated Bolivian coca leaves.

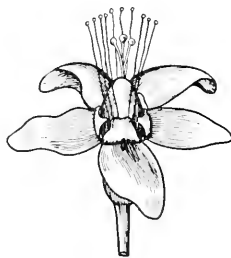


FIG. 4. Wild, sun-grown coca leaf.

suming that this differs in origin or species from the large brown cultivated Peruvian ("*Huanuco*") leaf, to which the name *E. coca* Lamarck has been universally applied.

If one is *E. coca*, the other is, and the name "*E. Bolivianum* Burck" could not stand, without showing that none of the leaves used in the manufacture of cocaine can properly bear the name of *E. coca*, and that no previously given name is applicable to them. The latter view is by no means extreme. It has been suggested by more than one writer and believed by many more, and at one time during this study, such a conclusion seemed to myself inevitable.

The name *E. coca* was published in 1786, in Lamarck's Dictionary II., 393, where a very full description was given.

This publication forever fixes the application of the name to the plant so described. An unfortunate defect in this description is the use of the word "ovate" in one place, as applied to the leaves, and "oval" in another. There are excellent reasons, shown below, for believing that oval was intended. The term "pointed" is not so readily interpreted, as it is too indefinite to allow us to know from the description alone, which type of pointed summit was intended.

In 1789, Cavanilles (*Diss.* III., pl. 229) supplied an admirable picture, which Dr. Morris (*Kew Bull.*, XXV., 2) says was taken from the same specimens, collected by Jussieu, from which Lamarck's description was drawn up. Since this work is scarce and few pharmacists can have access to it, the figure is here reproduced (Fig. 1).^{*} It is a beautiful picture of the cultivated coca plant of Bolivia, so well known to me. It agrees perfectly with the figure in Engler and Prantl (*Pflanzenfamilien*) and, taken in connection with Lamarck's description, it leaves no question as to the identity of *E. coca*. Furthermore, if it be compared with Fig. 2, taken from specimens collected by myself in the Bolivian plantations, there can be no doubt as to the identity of the two.

That Dr. Morris should have ignored such a conclusive piece of evidence as is afforded by this type-illustration, and should have reproduced as its equivalent, one (Fig. 3) which bears almost no resemblance to it, namely Hooker's figure of Mathews' specimen collected at Chinchao, Peru, is inexplicable. This action is the more unexpected, as he describes the leaf as "oval and pointed at both ends," whereas his picture shows it to be neither, but perfectly ovate, rounded at the base and acuminate and acute at the apex.^{*} This action has led to great confusion and many errors. The work of Cavanilles, as stated above, is very rare, and few pharmacognosists have seen its figure of *E. coca*. Depending instead upon this reproduction by Morris as representing the type, they have justly inquired, "Can it be possible that a plant whose leaves, marketed in many forms, have never been seen either ovate or markedly pointed, can pertain to a species possessing these as its characteristics?" It is not remarkable that some of the most cautious and experienced of them should have been unwilling to give an affirmative reply, or that they have felt compelled to search for a new or different specific name. It is therefore an important point gained that I am able to show conclusively that both forms of leaf pertain to different states of the same plant, thus connecting the name *E. coca* not only with the Bolivian and Peruvian cocaine-yielding leaf, as

^{*} Mr. E. M. Holmes, in the *Pharmaceutical Journal and Transactions*, has shown that this reproduction by Morris is grossly inaccurate and has correctly reproduced Hooker's figure. The leaves here correspond accurately with Morris' description and show that the plant is in all probability *E. Coca*, though the arrangement of the leaves varies markedly from the ordinary form.

shown by Cavanilles' figure, but also with various wild plants with ovate-acuminate leaves.

This conclusion is reached from a study of specimens of my own collecting, the history of which was carefully ascertained. There is a way of determining the ancestral form of a cultivated plant, and this is to study it in its reverted state of wildness. The difficulty with previously collected wild specimens of the coca plant is that their history was unknown or uncertain. Among my own specimens there are a number of which this



FIG. 3. *Erythroxylon Coca* Lamarck.
(After Hooker, per Morris.)



FIG. 5 Wild, sun-grown coca leaves.

was not true. Specimens were collected in old "cocales" which had been abandoned for nearly half a century, one for a much longer period. I have, in previous publications, referred to the modifications of the cultivated form, which these leaves have undergone, but their full description and bearing are only now pointed out. My attention was first called to them by an old German gardener, Herr Lohse, who had long grown the coca plant near the Coroico. He offered to show me some wild coca plants, and did so. They were growing in a ravine near where cultivation

had long before been carried on. He did not know the history of the shrubs, but in the following weeks, which I devoted largely to the study of coca plantations, I found a number of places such as I have described above. Forests had not re-covered the plantations, but shrubbery had, and amidst this shrubbery, occupying the old terraces, were numerous plants which the natives assured me, though the fact was too evident to require it, represented the original coca stock run wild. The changes in the leaves were most marked. They had greatly increased in thickness and in the strength of the venation, which was strongly impressed upon the upper surface. This surface had become much darker and more shining than in the cultivated leaves. The lower surface was brown and roughened, and the lateral lines, so characteristic of the cultivated form, had become obscure or even entirely wanting in many leaves. In others, their "areola" was outlined by a different color and surface, and enclosed by irregular lines consisting of connected veins, but there were no lines of collenchyma tissue, while in still others, one or both of these lines ran for a part of the way. Lastly, and most important, the leaves had become strongly pointed, in some distinctly acuminate. These changes are not surprising, in view of the results of recent experiments upon changes in leaf form produced by modifications of environment. However, a discussion of this question is not called for, as theories and explanations must accommodate to the known facts.

In Fig. 4 the leaves are thicker than in any of the others, while there is little tendency toward the ovate form. In another specimen not figured, the thickness and roughness are not quite so great, the areola or lateral lines, or both, are plain, though not conspicuous, in some leaves, wanting in others, and the ovate acuminate form is distinct. In Fig. 5 the last mentioned character is very marked indeed, the plant being the equivalent of that of Mathews (Fig. 2). Lateral lines or areola are visible in most of the leaves of this specimen, but not at all of the same character as in the cultivated leaves. I have not had an opportunity of examining flowers of these wild specimens, but I have many in fruit, and this agrees exactly with that of the cultivated form.

It must be borne in mind that the thickening, roughening, change of color and loss of lateral lines here referred to, pertain only to sun-grown plants. When grown in the shade, different changes occur, as shown below. It might be added that other pointed-leaved specimens to which Dr. Morris refers, and which I have myself studied at Kew, were also supposed to have come from wild plants. The positive history of my own specimens is thus confirmed by these bits of evidence.

These changes in the sun-grown wild leaf may now be contrasted with those occurring in leaves grown in forest shade, as illustrated by comparing Fig. 6, taken by myself in the borders of forests surrounding the

plantations, with Fig. 2, showing typical commercial Bolivian leaves. The former are larger, thinner, and paler, and the lateral lines are usually exaggerated. I assume that this is the character of a specimen collected by Holton in 1853 in New Granada (Fig. 7), and that its long and slender pedicels may be due to the same condition. This specimen is classed in the Kew Herbarium under *E. popayannensis* Poepp. With these I class Fig. 8, collected by myself near the geographical center of South America, many hundred of miles from any plantation, and Fig. 9, which I collected near the mouth of the Orinoco. This drawing does not sufficiently empha-



FIG. 6. Wild, shade-grown coca leaves.

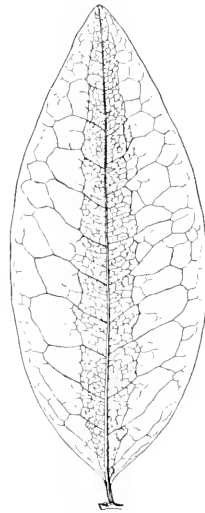


FIG. 8. *Erythroxylon Popayannensis* Poepp. Eastern Bolivia; not cultivated.

size the presence of the areola, though there are no distinct collenchyma lines. Although not the province of this paper to discuss the relations of species proposed subsequently to the publication of *E. coca* with that species, I may in passing call attention to the extremely close relationship between these forest-grown specimens of *E. coca* and *E. popayannensis*. It appears not in the least unlikely that the latter species is really nothing but the former.

Similarly, the closeness of *E. anguifugum* (Fig. 10) to the ovate-acuminate wild *E. coca* is apparent. It was for a long time questionable with me whether these two were not specifically identical, but the different secondary veins and, above all, the highly inequilateral tapering fruits of the former, forbid.

(To be continued.)

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CONTENTS.

Teaching of Materia Medica	245
WALTER G. SMITH, M. D.	
Agar-Agar—Preparation for Bacteriology	251
Editorial—New Addendum to British Pharmacopœia	255
Abstracts	256
Alumni, College and Class Notes	261



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NO. 11.

The Teaching of Materia Medica.

BY WALTER G. SMITH, M. D.

In bidding you a hearty welcome to the meetings of this Section I desire, at the same time, to express my grateful acknowledgement of the honor done me by the Council of the British Medical Association in inviting me to act as your President.

It is twenty-five years since the Association has held its annual meeting in East Anglia, and I confidently expect that this meeting, convened in the closing year of the nineteenth century, will be productive of much pleasure and profit to all who take part in it.

The title of our Section is Pharmacology and Therapeutics. When we consider that therapeutics dates from the beginnings of medicine, and that the ultimate aim and meaning of all our medical education and scientific culture is the alleviation of suffering and the cure of disease, does it not seem surprising that it was not until the year 1884 that, at the suggestion of Dr. Whitla, a separate section of therapeutics was instituted at the Belfast meeting?

And I have to note, not only the tardy official recognition of therapeutics, but also the fact that it has not enjoyed fixity of tenure, for, in 1890, at the Birmingham meeting, with its 12 sections, an address on therapeutics was, it is true, delivered by Sir. W. Broadbent, but no

Being an address delivered at the opening of the Section of Pharmacology and Therapeutics at the annual meeting of the British Medical Association at Ipswich, July-August, 1900.

separate section was allotted to therapeutics, which was tacked on to medicine. Likewise, neither at Newcastle-on-Tyne, in 1893; at Bristol, in 1894; nor at Carlisle, in 1896, did therapeutics find a home for itself.

Dr. T. J. MacLagan presided over the new Section of Therapeutics at the Belfast meeting in 1884, and took as the subject of his address the Methods of Therapeutic Research. In this address he clearly enunciated the limits and utility of the three lines of inquiry which have been followed in the past and must be pursued in the future—viz.:

1. Experiments on lower animals.
2. Statistical observations of the results of treatment; and
3. Individual observations at the bedside.

TEACHING OF MATERIA MEDICA.

The rise and growth of the science of pharmacology, which was founded by Bichat and Magendie early in the century, has made it plain that all correct appreciation of the mode of action of drugs must be based upon physiology and pathology.

The new departure has gradually leavened our conceptions of therapeutics, and renders the teaching of this branch alike more intelligible to the student and more satisfactory to the teacher.

I well remember the time when attendance upon materia medica lectures was a dreary enough obligation, and the course was to students perhaps the least popular in the entire curriculum.

Comparing the teaching of materia medica and therapeutics 30 years ago with the present time, three features stand out prominently:—

1. The retrogression of descriptive materia medica in its restricted meaning.
2. The establishment of special courses in practical pharmacy at the Medical Schools, conducted in suitable laboratories.
3. The development of pharmacology in its present acceptation—*i.e.*, the scientific investigation of the modes of action of drugs.

In regard to the place of Pharmacology in the medical curriculum, and the best mode of teaching medical students, I heartily join with Dr. Bradbury (Address to Section of Pharmacology and Therapeutics, Portsmouth, 1899) in protesting against undue neglect of what may be termed old-fashioned Materia Medica—*i.e.*, description of the *essential* properties and chemical nature of drugs so far as these elucidate the action of the remedy or its relations to prescribing.

A modern course of lectures on Materia Medica should most certainly be founded on the bed-rock of pharmacology—*i.e.*, physiology, but there is still room—nay, I think necessity—for practical demonstration of the physico-chemical properties of drugs, and we need not even

be ashamed of inculcating the utility of some familiarity at least with the pages of the "British Pharmacopœia," which it is the fashion of some to despise or deery.

Thanks to the labors of physiologists and pharmacologists on the one hand, and of organic chemists on the other hand, it is now possible, and even comparatively easy, to give an interesting and practically useful course of lectures on materia medica and therapeutics to medical students, but not earlier than their third year. I venture to affirm that it is entirely the fault of the lecturer, and not of his subject, if he does not succeed in quickening the dry bones of *Materia Medica*, and in awakening and maintaining the lively attention of his class.

With a little thought and trouble numerous simple experiments, chiefly chemical, can be shown in illustration of the more important physiological and therapeutical properties of drugs. Take, for example, antipyretics and their modes of action, or the local action of astringents and caustics, experimentally illustrated by the reactions of various acids and metallic salts upon solution of albumen; or, again, take the group of "aromatic compounds" where it is possible to give a brief but comprehensive survey of the general chemical and physiological relations of the subdivisions of this great group—viz., hydrocarbons, phenolic compounds, acids, and nitrogen derivatives (alkaloids, etc.).

And in this aromatic group, which includes the antipyretic drugs, there is abundant opportunity for drawing attention to many interesting points in illustration of the connection between physiological action and chemical constitution.

PHYSIOLOGICAL ACTION AND CHEMICAL CONSTITUTION.

Since the properties and motions of molecules which determine physical properties depend upon the motions and properties of atoms which determine chemical reactions, the same common laws must govern both physical and chemical phenomena.

And no one can doubt that the properties of the most complex compounds depend upon and are intimately correlated with the properties and configurations of the atoms and molecules of which the aggregates are built up.

This fascinating subject, which received its impetus in Great Britain from the labors of Crum Brown and Fraser, has not escaped the attention of former speakers at meetings of this Association, for, at the Brighton meeting of 1896, Sir T. Lauder Brunton delivered an attractive address on the connection between chemical constitution and physiological action, and Sir W. Broadbent upon more than one occasion

(in 1890, and again in 1895) has likewise referred to this topic, which he rightly esteems as one of fundamental significance.

Bit by bit—here a little, there a little—we are gathering the kind of material which can best help us to gain insight into the principles of therapeutics.

True, we may have to wait a good while before a stately edifice can be built up, but none the less does it hold true that the problems of therapeutics, and for that matter of all biology, are, at the root of things, essentially chemical or physico-chemical, or in so far as we are at all able to interpret them, or refer them to general laws.

To give an example or two:—

Some of the fatty hydrocarbons are in themselves tasteless, but let us introduce the radicals OH (hydroxyl), NH₂ (amidogen), or NO₂, and io! we get color, odor, or taste conferred upon the molecules. For a compound to have a sweet taste it must contain at least two oxygen atoms (and every electro-positive group must be united to an electro-negative group). Thus all polyatomic alcohols are sweet (i.e., glycol, glycerine, etc.), and aromatic sugars, e.g., have a bitter taste (Sternberg, *Chem. Centralbl.*, 1899).

Again, look at the group $\text{C}_6\text{H}_4\text{<}\begin{smallmatrix}\text{CO} \\ \text{NH}\end{smallmatrix}$ —viz., ortho-benzoylimide. As including it we have these compounds:—

1.—Anthranilic acid, $\text{C}_6\text{H}_4\text{<}\begin{smallmatrix}\text{CO} \\ \text{N}\end{smallmatrix}$, $\begin{smallmatrix}\text{OH} \\ \text{H}\end{smallmatrix}$, and its methylester, $\text{C}_6\text{H}_4\text{<}\begin{smallmatrix}\text{CO} \\ \text{NH}\end{smallmatrix}$, O CH₃ has a *smell* of orange blossom oil.

2. Indigotin, $\text{C}_{16}\text{H}_{10}\text{N}_2\text{O}_2\text{<}\begin{smallmatrix}\text{C}_6\text{H}_4\text{<}\begin{smallmatrix}\text{CO} \\ \text{NH}\end{smallmatrix}\text{>C} \\ \text{C}_6\text{H}_4\text{<}\begin{smallmatrix}\text{CO} \\ \text{NH}\end{smallmatrix}\text{>C}\end{smallmatrix}\parallel$ has an intense *blue color*.

3. Saccharin, $\text{C}_6\text{H}_4\text{<}\begin{smallmatrix}\text{CO} \\ \text{SO}_2\end{smallmatrix}\text{>NH}$, is an intensely *sweet* substance; and, lastly,

4. Ox-indole, $\text{C}_8\text{H}_7\text{NO C}_6\text{H}_4\text{<}\begin{smallmatrix}\text{CO} \\ \text{NH}\end{smallmatrix}\text{>CH}_2$ is a constituent of essential oil of jasmine flowers, associated with anthranilic methyl-ester.

So we find that different effects produced upon the senses of *smell*, *taste*, and *sight* are coincident with differences of arrangement in the molecules of the respective compounds, which are all built around a common nucleus (Watson Smith).

Innumerable difficulties still await an answer—e.g., why should saccharin, which is an “ortho” compound, be so sweet, while the “para” compounds are devoid of sweetness? Still we can assert that great

progress has been made in expressing the laws of mixture, combination, solution, dissociation, and chemical transformation on a generalized basis, and chemistry and chemical physics are gradually being brought under the sway of dynamical laws.

PHYSICAL CHEMISTRY AND THERAPEUTICS.

Within the last 15 years the remarkable and daring theories of van't Hoff and his followers upon the nature of dilute solutions, based upon certain physical data (viz., osmotic pressure, alterations of the boiling point and freezing point), together with Arrhenius's hypothesis of ionic dissociation, have largely engaged the attention of physicists and chemists; nor have they failed to make their impress upon pharmacological investigations.

The earliest reference I have noted in pharmacological work to van't Hoff's important researches is contained in a paper by Hofmeister (*Zur Lehre von der Wirkung der Salze*. *Archiv f. exper. Pathol. und Pharmac.* Bd. xxv., 1889).

In the same journal (Bd. xxix., 1892) is a suggestive paper by Dreser, "Ueber Diuresis und ihre Beeinflussung durch pharmakologische Mittel."

In this connection I may specially refer to Dr. C. R. Marshall's excellent summary of the "Ion" question, published in the *Practitioner*, February, 1898. In this paper which broached the subject for the first time in an English medical journal, he gave an abstract of Krönig & Paul's theory of the action of antiseptics in the light of the electrolytic dissociation theory, and also of Loeb's views on the physiological effect of various radicals.

But, furthermore, we have to take into account, not only the number and kind of atoms in the molecule, and their interior arrangement and grouping (constitution), but certain physical properties of compounds previously inexplicable have found their explanation in another development of chemical theory which has proved extraordinarily fertile. I refer to stereo-chemistry—i.e., the doctrine of the spatial configuration of the molecule. This theory has done much to elucidate the difficult problems of isomerism in organic chemistry, and we cannot doubt that it will shed light upon chemical transformations occurring in the organism. Dr. Emil Fisher has published in the *Zeitsch. f. Physiolog., Chem.*, 1899, an important paper, in which he seeks, in conjunction with Thierfelder, to explain the selective action exhibited by the enzymes either in effecting fermentation or in producing hydrolysis.

It is well known, for example, that a glucoside, e.g., salicin, may be attacked by one enzyme (emulsin) and not by another (yeast en-

zyme), and accordingly Fischer and Thierfelder conceive the hypothesis that between the enzymes and those substances which they attack there must exist a correspondence in molecular configuration, which they compare to that of a lock and its key.

And again, of two isomeric sugars closely allied (e.g., glucose and xylose), one (glucose) may be oxidized in the body or converted into glycogen, whereas the other (xylose) may pass unaltered through the system.

All these various methods of investigation are to be welcomed by us as tending to aid in the unravelling of pharmacological problems. Yet, although we shall ever strive to combine science with practice, we need not run away with the notion that pharmacology will surely inaugurate the golden era of therapeutics, and enable us to give a satisfactory reason for each medicine we prescribe.

In the future, as at present, it will probably always hold true that, in order to meet the complex and shifting needs of the daily practice of our profession, pharmacology must be wedded to careful and well-balanced clinical observation, and practical therapeutics not infrequently outruns pharmacology, for, as Dr. Cuming well remarked in his scholarly presidential address at the Belfast meeting in 1884, "The true dignity as well as the great attraction of our studies lies in their practical usefulness." And Bacon has said—"They be the best physicians which, being learned, incline to the traditions of experience, or, being empirics, incline to the methods of learning."

But here we are constantly made to feel our difficulties and limitations, and the wise physician is not addicted to boasting of his therapeutic successes. In therapeutics, as in theology, opposite conclusions can be drawn from the same text.

What are we to say to such a fact as this?

In the *Practitioner* some months ago there appeared a highly interesting series of papers upon pneumonia and its treatment. Yet, upon a definite, and apparently simple point—viz., the administration of opium in acute pneumonia, two men, whose powers of observation have been developed to the highest possible degree by constant exercise for more than half a century, expressed diametrically opposite opinions. While Sir Samuel Wilks announced his firm belief in opium, Sir William Gairdner was of opinion that in most cases opium in pneumonia is a remedy to be entirely distrusted, and even severely proscribed.

A PROTEST.

One word in conclusion. The flood tide of discovery of new synthetic chemical remedies has, together with a few treasures which have

risen on its crest, also washed on shore much rubbish of a pseudo-scientific sort.

Are we not daily worried with samples, and with advertisements and circulars from eagerly competing firms, announcing new drugs or novel combinations, which, perhaps, are used chiefly by those who do not know how to employ the old ones. Scarcely are they advertised once before they are elbowed away by importunate new-comers.

The advertisement is headed with an enigmatical name standing over an appalling chemical formula, and probably ornamented with a structural or graphic diagram. All this is backed up by a plausible show of original experimental work, and ends with a "full literature." In a pamphlet lately issued about some new-fangled preparations of iron, 62 literary references were appended, and a well-known and reputable drug firm advertised in a recent number of the *British Medical Journal* more than 20 of its special preparations, some of which probably most of us never heard of. And not only are we plagued with innumerable circulars which choke our waste paper baskets, but we are tormented during our consulting hours at home by the visits of smooth-tongued touting agents of many of the large firms.

This most objectionable practice is on the increase. It should, in my humble opinion, be stamped out by the medical profession, and I avail myself of this public opportunity to protest against it.

For some time past I have made it an invariable rule, and given directions accordingly, that I will not receive or interview the agent or representative of any drug firm, no matter how famous. If by chance or sheer audacity one of these gentry does find his way into my consulting room he very speedily finds his way out again.

With such thoughts in our mind, ought we not harken to the admonition of St. Paul, and "henceforth be no more children, tossed to and fro, and carried about with every wind of doctrine."

Agar-Agar and its Preparation for Bacteriological Purposes.

BY W. W. ALLEGER.

The preparation of agar by the older methods is well known to be a tedious operation, which consumes much valuable time. The product obtained is seldom, if ever, quite transparent; while not infrequently troublesome precipitates which not only mar the appearance of the medium but render it unsuitable for the finer classes of work, develop after sterilization.

The use of powdered agar, which has been in the market for two or three years, because of its ready solubility, simplifies the process and greatly shortens the time required in the preparation of the medium; but for some reason, doubtless because of the scant notice which has been given to the matter in the literature, it does not yet seem to have come into general use. To call attention to the powdered form, and report a method for obviating the appearance of secondary precipitates in the tubes, on sterilization, was the object of a paper by the writer published in the first number of the *Journal of Applied Microscopy*.

The method then described materially lessened the time and labor required in the preparation of agar and gave a perfectly transparent product. Subsequent efforts, aided by a suggestion obtained from an article by Dr. Ravenel, in the June number of the *Journal*, have enabled us to shorten the time limits from two and one-half hours to one hour, counting from the time of the receipt of the meat in the laboratory until the last drop of the completed medium has passed through the filter, and yet obtained average results; while by deferring filtration until after the first sterilization a perfectly transparent medium is obtained. In the latter event from half to three-quarters of an hour suffices for the initial preparation, exclusive of the time required for sterilization in bulk, but a half hour more is required on the following day for reheating and filtering. The process is as follows:

Rub up 10 grams each of powdered agar and Witte's powdered peptone, and 5 grams of sodium chloride, in a porcelain-lined saucepan, with just sufficient water to thoroughly moisten the powder and form a thin paste; add gradually, while stirring the mixture, 500 cc. of water; place on a gas stove, interposing a piece of asbestos board or wire gauze between the saucepan and flame, and heat the mixture until the agar is dissolved, stirring occasionally to prevent burning on the bottom of the dish. If the paste made with cold water is properly rubbed up, so as to break down all the lumps and moisten all the agar, solution will be practically complete by the time the boiling point has been reached, so that two or three minutes' brisk boiling suffices.

With the aid of a meat press, extract the juice from 500 grams (one pound) of lean meat, and add the juice to 500 cc. of water. Mix this "fresh water" with the agar solution—which now should have cooled sufficiently not to coagulate the albumin in the fresh water, but still be hot enough to remain fluid—and carefully neutralize with a four per cent. solution of caustic soda.

After neutralization boil the mixture until all the coagulable albumin in the fresh-water has been coagulated and comes to the surface, leaving a clear fluid beneath. Again test the reaction, and, if need be,

correct it; add sufficient boiling water to supply any loss that may have occurred through evaporation, and filter through paper. To insure rapid and complete filtration without the necessity of re-heating the mass I distribute the solution in three or four filters, using coarse folded paper, pass sufficient boiling water through each filter to wash away loose lint and thoroughly heat the funnels just previous to commencing filtration of the agar. With good paper and proper attention to detail, filtration is usually accomplished in from ten to fifteen minutes.

While filtration is in progress sterilize or boil a tube of the filtrate. If it remains clear after heating, and when cold is free from sediment and only slightly opalescent, the entire filtrate may be immediately run off into tubes and sterilized. But if a precipitate should make its appearance either on heating or while cooling, the filtrate should be sterilized in mass and allowed to stand in the sterilizer with the light turned low or out until the precipitate collects together at or near the bottom of the flasks, when the agar may be re-heated and re-filtered; this time with the confident expectation that the filtrate will be and will subsequently remain transparent. Or, if preferred, the agar may be run off into cylindrical deposit glasses, sterilized therein, and allowed to stand in the sterilizer, as before, until the sediment has settled to the bottom, after which, the clear fluid may be syphoned off, or allowed to cool and cut off with a knife and the portion containing the sediment be discarded, or filtered.

Usually, on account of the liability to secondary precipitates, and because the agar is never so transparent when filtered immediately as it is when the filtration is deferred until after the first sterilization, I do not filter at once, but merely strain out the coarser flocculi by running the medium through loosely packed cotton, sterilize in flasks, allow the flasks to stand in the sterilizer and slowly cool, and wait until the following day before filtering through paper. Filtration is then still more rapid, if care is taken to bring the temperature of the mass up to the boiling point in the sterilizer before commencing the filtration, and the product is always transparent.

The coarser precipitates which occur on sterilization are usually due to the coagulation of albumin which has escaped coagulation at the time of the preparation of the medium; but the troublesome ones are of more doubtful origin; probably they consist, in the first place, of very fine flocculi which pass through the filter on the first filtration, and, in the second place, of salts which are held in solution during the first filtration, but which as a result of changes in the reaction, oxidation, or because of lessened solubility in the cold medium and their presence to supersatu-

ration, are deposited as the medium cools. But whatever their nature and cause I have been unable to avoid their appearance altogether save by the method just detailed. When present in only small amount and sterilization is not too much prolonged (ten minutes), if the tubes are quickly cooled they cause no perceptible sediment and only a slight opalescence in the finished product and are then really not objectionable, though I always prefer to have my media perfectly transparent if possible.

Eggs are not needed to clear the agar when made by the above process, the albumin in the meat juice being sufficient for the purpose.

If it be desirable to make agar from boullion it is only necessary to rub up the powdered agar with a little of the cold boullion to a paste and then gradually add the balance of 500 cc. thereof, and boil until solution—which quickly takes place—is complete; add the balance (500 cc.) of the boullion; stir in the whites of two eggs and boil until the egg albumin is coagulated and rises to the surface leaving the clear solution beneath, and then filter, as before. As, however, the agar can be made from the fresh water almost as readily and quickly as from the boullion there is little use for previously prepared boullion.

Meat extract can also be substituted for the flesh water. Formerly I used from 20 to 30 cc. of Valentine's meat juice per liter, but more recently I use but 10 to 15 cc., which quantity I find sufficient. I prefer Valentine's to other extracts I have tried, as it makes a lighter-colored agar and seems to be free from persistent spores, as no more care is required in the sterilization of the media made from it than from meat itself. If 10 cc. of meat extract (or meat juice as Valentine terms it), be added to 500 cc. of water and substituted for the fresh-water the process is the same as with the latter, save that egg albumin must be added to clear the medium if it be desired to filter before sterilization. Meat extract, is more convenient than meat for making media, but some organisms do not seem to thrive so well upon the media thus made.

The precaution of first moistening the agar and peptone with a small quantity of cold water or cold boullion, as the case may be, and rubbing to a smooth paste free from lumps must not be omitted. If stirred directly into the hot solution—and to a less extent if stirred directly into a large quantity of cold water, without previous moistening—the agar rolls up into little lumps and is almost as difficult of solution as the finely cut pieces of shred agar.

If a meat press is not at hand the fresh-water can be made in the ordinary way either by macerating finely minced meat in cold water for a few hours, or by digesting for a shorter time at a higher temperature.

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EDITED BY HARRY B. FERGUSON, PHAR.D.,

WITH THE COLLABORATION OF

CHAS. RICE, PH.D. H. H. RUSBY, M.D. V. COBLENTZ, PH.D. GEO. A. FERGUSON, PH.D.
GEO. C. DIEKMAN, M.D. JOHN OEHLER, PH.G. SMITH ELY JELLIFFE, M.D., PH.D.

The New Addendum to the British Pharmacopœia.

According to a contemporary, the *Medical Press and Circular*, "The advent of an Indian and Colonial addendum to the British Pharmacopœia will probably come as a surprise to many people. It is the first step in the production of an Imperial Pharmacopœia. We are told that it is to a certain extent provisional, that it is supplementary to the Pharmacopœia of 1898, and that it is to be regarded as a preliminary to the next Pharmacopœia. It is understood that the drugs and preparations included in this list are to be prescribed by medical practitioners according to their own judgment of their value, and that it is not contended that they should be substituted by dispensers for similar articles already in the Pharmacopœia except in those cases where authority for such substitution is expressly indicated in the text. Many of the names of drugs and preparations included in the Addendum are probably unfamiliar to the average prescriber who might fairly be excused for professing ignorance of the value and therapeutic properties of ispagula, kaladana, infusum andrographidis, infusum toddaliæ, or even of tinctura azadirachtæ indicæ. In some cases he is on more

familiar ground, for in *agropyrum* he may recognize the old *triticum repens* or couch grass of our ancestors, whilst bael fruit, *arnica* flowers, *grindelia robusta*, *datura* leaves and seeds, *kara* and *oleum gynocardie* or *chanmoogra* oil present no difficulty. The cotton root bark, *gossypii radiceis cortex*, is probably introduced as a substitute for ergot, as it has been found useful in the same class of cases as that drug. Sesame oil is a useful solvent, and may be employed in making the official liniments, ointments, and plasters for which olive oil is usually employed. *Pecorhiza* and olive bark will probably puzzle the most enthusiastic student of *materia medica* who will consult the text-books in vain for a description of their virtues.

The new *Pharmacopœia* is useful as an intellectual exercise, and many patients will probably receive a certain amount of satisfaction from having prescribed for them a series of drugs with the names of which they are not acquainted."

Abstracts.

Rapid and simple process for milk analysis. Guilett (*Bull des Sciences Pharmacol.*, 1900, 201) has devised the following process for milk analysis in which no other apparatus is necessary than filter paper, a funnel, an analytical balance sensitive to .0001 mg. and crucible. Either a Swedish ashless filter of 9 cm. diameter or ordinary of known ash weight is selected.

1. *Specific Gravity*:—An accurately measured volume of 2 cc. of the well-mixed sample is carefully measured (at 15° C.), spreading over the inner of two filters placed one inside of the other, four folds to each side. This is quickly weighed and then divided by 1.00832 which represents the specific gravity.

2. *Total Solids*:—Six drops of dil acetic acid are then spread around the edges of the filter which is dried at 95° C. After deducting the tare of the filter and funnel, the difference in weight represents the Total Solids.

3. *Butter Fat*:—The butter fat is estimated by extracting the filter with petroleum ether (40 to 60° C.) or ether, which is poured over the upper edges until when a drop taken from the tip of the funnel fails on evaporation to leave any appreciable fatty residue. The filters are dried and weighed, the loss in weight represents fat.

4. *Lactose and Soluble Salts*:—Wash the previously dried filter with hot water into a 50 cc. cylinder until the washings measure 23 cc. Filter is dried and weighed. The loss in weight represents Lactose and Soluble Salts.

To the 23 cc. filtrate add 2 cc. of a 10 per cent. sol basic lead acetate which precipitates all albuminoid matter, the filtrate is then treated in the usual manner with Fehling's Solution for the estimation of sugar.

5. Ash:—The filters are ignited in a tarred crucible ash weighed, and after deducting the filter ash we obtain the weight of the insoluble inorganic salts. On adding to this the weight of soluble salt (4) we obtain the total ash.

6. Albumin and Casein:—By deducting the butter fat, lactose, soluble salt and ash from the total solids (2) we obtain Casein and Albumin.

ALCOHOL AS A STIMULANT TO NATURAL RESISTANCE TO INFECTION. Buchner (*Munch. Med. Woch.*) gives directions for utilizing the bactericidal power of normal blood, which, he believes, depends upon bactericidal alexines or proteolytic cell-enzymes. Constantly changed dressings soaked in 96 per cent. alcohol, as recommended by Salzwedel in the treatment of lymphangitis, cellulitis, whittows, furuncles, mastitis, etc., are the best means for bringing this bactericidal power into action, since they irritate the vessels directly, cause their dilation, and produce an increased flow of blood to the diseased part. The alcohol, which the writer's experiments show to be by far the most powerful local vaso-dilator, should be used liberally. In most cases of dental caries the disease can be arrested or cured by brushing the teeth twice a day with a 45 per cent., or, if the gums are tender, a weaker alcoholic solution. The softened dentine regains its hardness and loses its tenderness, and occasionally even fresh dentine replaces the old and diseased. In fact dental caries heals under alcohol in the same way as an abscess or a cellulitis. Buchner has also tried the treatment in tuberculosis arthritis. Of 10 cases 2 were rapidly and completely cured, and the rest were greatly improved. It is certain that the local vaso-dilator action of alcohol penetrates to some depth below the surface, and alcohol bandages round the neck might possibly be useful in laryngeal tuberculosis. Since the axillary and inguinal lymphatic glands are obviously the usual and chief stations in which the plague bacillus multiplies, Buchner recommends that directly plague begins, the axillae and inguinal regions should be enveloped in alcohol dressings, both for prophylaxis and treatment. Since the cases which recover do so because the natural resistance of the organism is sufficiently strong, it is only rational to aid this resistance in all cases by means of local vaso-dilation.

THE ADULTERATION OF VINEGAR. Vinegar occupies a prominent place among the many articles that require an official standard to bring them thoroughly under the provisions of the Food and Drug Adulteration Act. The subject has been ably dealt with both from the chemical and the public health point of view, in the recent annual report issued by Dr. Edmunds, medical officer of health for St. James's, Westminster. The bottom limit for the strength of commercial vinegar has been fixed by the Society of Public Analysts at 3 per cent. of acetic anhydrid, of 3.53 per cent. of real acetic acid. Experience has shown that it is useless to attempt a prosecution unless the vinegar has been watered down below 3 per cent. Dr. Edmunds obtained convictions in four cases where the vinegar was shown to contain sulphuric acid. His contention as regards the making of vinegar with gypsum is sound—namely, that sulphate of lime used in that manner is “a foreign ingredient,” and—unless shown to be necessary for the manufacture or preservation of the vinegar—its introduction is an adulteration. Besides gypsum there are other materials whence sulphuric acid is derived in the vinegar, such as sulphur applied in the casks and vats, and coloring caramel made from sugar steeped in sulphuric acid and ammonia. Dr. Edmunds may be congratulated on having done some good solid work in establishing a legal precedent with regard to the presence of free sulphuric acid in vinegar. There is an immense field open for energetic administration of the Adulteration Acts, and it is to be hoped that his example will be widely followed.

THERAPEUTIC VALUE OF SALIVATION. Von Leube (*Berlin. Klin. Hoch.*) was encouraged to employ salivation therapeutically through the following case. A patient with cirrhosis of the liver and marked ascites became, without any known reason, suddenly salivated, and lost more than 5 pints of saliva in 24 hours. The ascites then subsided rapidly. Since most drugs which increase the flow of saliva either do not do so sufficiently to produce a therapeutic result, or, like pilocarpin, act on the skin as well, Von Leube made his patients chew India-rubber tablets. Of 5 cases of pleurisy so treated the effusion was absorbed in 4, and of 2 cases of ascites in one. Increasing the flow of saliva (ptyalism) should always be tried, when other means fail to cause absorption of an effusion, as a useful aid to diaphoresis and diuresis.

USE OF OINTMENTS. Jonathan Hutchinson F. R. S. (*Archives of Surgery*) says:—The customary use of an ointment at bedtime is not sufficient. In many cases it should be applied three times a day

at least. Further, definite inunction, occupying a few minutes for each spot, and not mere anointing, should be performed. What may be done in many skin diseases by proper inunction is astonishing. To apply the ointment on lint is of little use. If the patient will three times a day undress before a warm fire and perform inunction patiently, he may avoid the disagreeable condition of keeping the skin always greasy. In a case of psoriasis in which arsenic disagreed and the spots persisted, the drug was discontinued, and strong chrysophanic ointment was ordered to be rubbed in by the nurse three times a day. The spots rapidly disappeared.

EXPLOSION CAUSED BY MIXING CHLORATE OF POTASSIUM AND SACCHARINE IN A TOOTH-POWDER. The editor of *Lyon Medical*, July 29, 1900, recalls an incident reported by M. Créquy to the "Société Thérapeutique" in 1894. M. Créquy prescribed the following formula for a dentifrice—chlorate of potassium, 5; calcined magnesia, prepared chalk, borax, of each 10; essence of peppermint, 2 drops: so far so good, but to make his tooth-powder more aseptic, M. Créquy added 0.5 of saccharine. The compounder, rubbing the chlorate of potassium and saccharine together in a mortar, produced a violent explosion and burned his hands. Moral: Do not handle chlorate of potassium and saccharine at one and the same time.

FAIRBANKS, A. W., AND GRAWITZ, E. *Experiments upon the Disinfection of Rooms with Formaldehyde Gas.* (*The Boston Medical and Surgical Journal*, Vol. CXLII, No. 25. These experiments were made upon germs of the highest virulence: Pyococcus, diphtheria, typhoid, staphylococci albi, streptococci and anthrax.

The following results were obtained:

1. When the gas was allowed free access to the infected fragments of cloth, a sterilization of the respective fragments occurred.
2. When the infected pieces were placed between two layers of cloth a negative result was obtained only with pyococcus and staphylococcus. Anthrax, diphtheria and typhoid showed positive growth.
3. When placed between mattresses or wrapped many times in cloth the anthrax showed growth without exception. The others were variable in the results.
4. Dust collected from the rooms gave growth of anthrax only. They concluded that the gas, in a strength of 2 grammes per cubic metre of air space, is absolutely destructive upon all objects to which it has free access. In the case of organisms of an exceptional virulence an exposure of twelve hours was proven sufficient.

PREVENTION OF TUBERCULOSIS. At the Munich meeting of the Tuberculosis Commission, held under the auspices of the German Naturforscher und Aerzte-Versammlung, Italo-Tonta, of the Milan, summarized in an admirable way the regulations which should be established by the authorities for the prevention of tuberculosis. These regulations are so concisely and clearly stated that they might well be embodied in a tract and scattered broadcast through the world. They are as follows:

A CASE OF OPIUM POISONING FOLLOWED BY RECOVERY. Bartels describes the following case: The patient, a feeble female baby, ten weeks of age, showed the typical signs of malnutrition and the hydrocephaloid condition of ill-fed infants suffering from cholera infantum. Although put on rational treatment and dietetic management the number of the movements did not diminish. A medicine containing, among other things, a minute quantity of opium was therefore given. As the baby was very restless during the night, the nurse gave several large doses of the remedy. In response to an urgent appeal, the author saw the baby at eight o'clock the next morning and found it apparently dead. It was of a pale, livid color, felt cold to the touch, no respiration, no pulse nor cardiac action could be determined. The reflexes had entirely disappeared even from the half-closed eyes. As the appearance suggested death from opium poisoning rather than from cholera infantum, treatment for the former condition was begun at once. There was apparently no result from the routine treatment, as artificial respiration, irritation of the skin, rhythmical traction of the tongue, etc. As soon as faradization of the phrenics was started by the use of a battery sent for in the meantime, a short, feeble respiration took place. This faradization was kept up altogether for ten hours, a large flat electrode was kept over the epigastrium and a small one over the phrenic nerve in the neck. Electricity was applied intermittently and alternately on both sides about fourteen to sixteen times a minute. Even four hours after this treatment had been started there was no radial pulse, no spontaneous respiration or movement of any kind. At the end of ten hours the body began to get warm. Artificial means to keep up the body heat had to be employed until then. The reflexes and respiration returned. The baby recovered entirely from the effects of the poisoning, had no more diarrhea and thrived nicely.—*Munchner Med. Wochenschrift*, No. 5, 1900.

Alumni, College and Class Notes.

CONTRIBUTORS.

Alumni Association,	WM. A. HOBURG, Jr., Ph.G., 115 West 68th St., N. Y.
Alumni Notes, Socials, etc., and Classes prior to 1893, . . .	CHAS. S. ERB, 121 Amsterdam Ave., N. Y.
Bibliography,	ADOLPH HENNING, Ph.D., 68 William St., N. Y.
Class '93,	EUGENE F. LOHR, Ph.G., 508 Marcy Ave., Brooklyn, N. Y.
Class '94,	FRANK N. POND, 226 Ninth Ave., N. Y.
Class '95,	GEO. J. DURR, Ph.D., Randalls Island, N. Y.
Class '96,	CHAS. G. H. GERKEN, Ph.D., 169 S. 4th St., Brooklyn, N. Y.
Class '97,	E. A. MEINECKE, Ph.G., 14 Platt St., N. Y.
Class '98,	T. B. FURNIVAL, Ph.G., 115 West 68th St., N. Y.
Class '99,	THEODORE E. MEYERS, Dorranceton, Pa.
Class 1900,	ROBERT B. LIVINGSTON, 115 West 68th St., N. Y.
Class 1901,	ALBERT C. THOMPSON, 115 West 68th St., N. Y.
Post Grad. 1900,	FANNY A. BLAN, Ph.D., 115 West 68th St., N. Y.
Legal Notes,	H. A. HEROLD, Ph.G., 108 Fulton St., N. Y.

Class of '98.

Somebody lost a class-pin. Did anybody find one they don't need?

Every one I meet asks me about the '98 notes. Told them to see the other fellow.

Miss Bulhole thinks it's awful that no notes are in the Journal, maybe she likes to see her name. Ask me.

"Napoleon" Manheimer settled peaceably in the Bronx, somewhere between Mott Haven Canal and Woodlawn Cemetery.

"Charlie" Stecher opened up a store at 174th Street and Bathgate Avenue, the Bronx, and he wants the "fellars to fall in," not drop in, so that he knows it.

He bought a store on Lenox Ave., near 135th St. Think the boys ought to come around oncet.

Sub. Class Reporter, F. A. T.

Wendler (Fatima) lost in weight. Wait till you see him, you hardly can tell the difference—I mean the difference in weight to be lost and the time lost in waiting.

Miss M. Schefcik went abroad last summer because she got to use the store at home, she wanted to throw that awkward feeling away when she took sea-sick, see? She didn't say it worked.

Freddie Brown
Is in town
Rubbing up some
Pill mess down.

Mister Editor:—Strange things happen in a century, and probably one of the most strange things that will happen within this present century is, that the Journal of Pharmacology, through its editor, might be able to print something concerning the whereabouts of that class reporter of ours.

He has been so busy in the last century attending to various collegiate duties, that I'm afraid his nerves are shattered to such an extent that he doesn't know when and with whom he graduated from the N. Y. C. P. Still, we will hope that he may regain his former healthy condition, and assume his former state of life and happiness in class circles, so that we may know whether our boys and girls (I beg pardon) girls and boys are still living among the living.

If poor Tommy sleeps much longer, he'll turn into the Rip Van Winklan comatose state, and when he awakes he'll wonder why it was. Yours apologetically,

E. P. WENDLER, PH. G. '98.

'99 Notes.

Roberts is still in Pittston, and an active member of the firm of Farrer, Peck & Roberts.

Received a very nice letter some weeks ago from our friend C. J. Cunz. (I guess you all know Cunz.) He is with August Dreschur, 108 Bowery Street, Newark, N. J.

Benjamin F. Maxey, Pres. '08, just stepped and shook hands with me a few minutes ago. Ben. is looking first-rate and a half. He has purchased the business of F. B. Crotzer, 23 N. Main Street, Wilkes Barre, Pa., Y. M. C. A. building. It is one of Wilkes Barre's oldest established drug stores. We all wish Ben. the best of success, and no doubt he will have it.

Well, boys, in closing these few notes, I wish you all a Merry Christmas and I hope that the new year may brighten the prospects of our Royal Pill Rollers. In making resolutions for the Twentieth Century resolve that you will drop a postal to your reporter at least once a month, then, when you receive your Journal, it will be a pleasure for you to scan the interesting news from our Class of '99.

No doubt some of the boys are wondering what has become of Meyers, as they don't hear from him through the columns of the Journal and more. Nothing the matter, boys, only I've been waiting to hear from you. (If you can't come, why don't you write?) In the meantime I've been off on a honeymoon. It affords me a great deal of pleasure to inform you that I have an assistant reporter. So, now, don't hesitate sending in news, as we can take care of all that comes in. Send in early to avoid the rush.

The

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CONTENTS.

Increasing Value of Cod Liver Oil	263
L. J. LAUTENBACH, M. D.	
Urotropin and Its Action	269
DR. ZAUDY.	
Editorial—Physical Therapeutics	274
Abstracts	276
Alumni, College and Class Notes	279



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No. 12.

Increasing the Therapeutic Value of Cod-Liver Oil by the Addition of Free Iodine and Free Phosphorus.

BY LOUIS J. LAUTENBACH, A. M., M. D., PH. D.

PHILADELPHIA.

Cod-liver oil, the oil of the liver of the *Gadus Morrhua*, has been a much used remedy for rheumatism, scrofulous and wasting diseases for centuries, but only within the past century has it become a standard remedy with the medical profession. Many have been the preparations introduced as substitutes, but nevertheless it still stands pre-eminent and really alone in its special field—a field which in our opinion cannot be said to be entirely dependent upon the fatty ingredients of the oil, nor upon its halogen constituents, nor upon its nerve-building property.

The purposes of this paper are to compare the modern cod-liver oil with the cod-liver oils of the time prior to 1853 and to discuss the seeming relative loss in the therapeutic action of the newer oils, and also to endeavor to explain the cause of this loss as well as a means for overcoming it. When the Iclander or the Norwegian of the long ago went fishing for cod he brought in his catch, packed the livers in barrels and headed up the barrels. He continued doing this all the season, which usually lasted about three months. After the season was over he opened the barrels and skimmed off the floating oil. Of course by this time, even in

*Surgeon-in-Charge of the Philadelphia Eye, Ear, Nose and Throat
Institute; Nose and Throat Physician to the Odd Fellows' Home;
Late Chief of Eye Clinic of German Hospital.*

those cold regions, the livers were in an advanced stage of decomposition. This oil was the best oil of those days and was usually a light-yellow color, and known as raw *medicinal oil*. By continuing this process more oil, but of a darker shade of color, was obtained, and this was known as *pale oil*. Later on when the putrefaction became further advanced the oil became a browner color, and this oil, called a *light-brown oil*, was drawn off and kept separate from the former. When no more oil could be squeezed out, the residue was heated in a cauldron far beyond the boiling point, and the oil thus obtained was known as *brown oil* and was rarely used medicinally, being employed in the arts, especially for tanning processes, etc. Indeed even the variety known as the *light-brown oil* was often rejected for internal medicinal purposes. Of the above-mentioned varieties of oil all were contaminated by the putrefactive process. Only one variety—the brown oil—was subjected to the influences of heat.

Since the introduction of the Möller (1) steam process in 1853 the method of obtaining the oil has all been changed. As the oil is prepared to-day in Norway, at the celebrated fishing grounds of Lofoten and Romsdalen, the livers are taken usually within six or eight hours after the cod has been caught and subjected to this process. At both these places the fishing season extends from January to April, and as the thermometer then generally registers below freezing, there is no chance for decomposition to occur between the catch and the preparation of the oil. At the fisheries of Newfoundland and Massachusetts and at those on the Shetland Islands and the eastern coast of Scotland, as well as those on the coast of Russia and Iceland, the fisheries being carried on at considerable distance from the land, and at the two places first mentioned during the hot season, it necessarily follows that putrefaction must occur before the oil is prepared.

By the steam process the livers are heated over a large water bath, or in jacketed cauldrons, or, when the process is carried on aboard ship, in an open inverted cone of wood, the purpose being to relieve the livers of all the contained oil by means of a temperature not above 180° F. To-day the old processes have been supplanted by this steam process.

With reference to the normal composition of the oil of to-day, no one has given the subject a more thorough study than F. Peckel Möller (2) who has published a work of some 492 pages, the index of which contains nearly 3000 titles. It is considered by far the most complete exposition of the subject that has ever been presented.

By a study of this and other chemical researches on the subject, we are at once convinced that we are dealing with a most complex organic body containing, one might almost say, numberless constituents. Möl-

ler classified the components of cod-liver oil as follows: Hydrocarbons; oxygen compounds; combinations of oxygen compounds; oxygen cyclo-compounds; halogen compounds; sulphur compounds; nitrogen compounds; proteids; ptomains and leucomains; toxins and antitoxins; ferments. The oil which he studied is one peculiarly free from putrefactive compounds, on account of it being made at once from the fresh livers, and is peculiarly free from adulterations such as might arise from the use of the livers of other fish, as in the Norwegian waters during the cod season practically no other fish exist. The cod abound and destroy all other fish, whereas, in the Newfoundland, Massachusetts, Scotland and Russian fisheries the cod, the pike, the haddock, the ling; the whiting, and many others, even the shark, are frequently caught and their livers are probably used in the preparation of the oil. How much more complicated may be the chemical composition of such a mixture, especially when subjected to the usual putrefactive processes, I know not.

As to what may be the active principle or principles of this complex body there has been much discussion, and we seem to be as far from a satisfactory solution as half a century ago. At various times various ingredients have been so designated, in their turn the title has been given to the supposed alkaloids, to the morrhuol, the iodine and bromine, to the trimethylamine, to the contained fat, to the phosphorus, as well as to many other of its constituents. No doubt it has no single body which can represent the sum total of its activities, but must be considered as a complex organic body whose therapeutic effects, while evident, are yet withal a multiple action.

The therapeutic virtues of cod-liver oil are within certain lines peculiar to itself. Its effects on patients with struma, scrofula, tuberculosis, syphilis, rheumatism, gout, rachitic and nervous affections, as well as on sufferers from wasting diseases, are marked and typical; no other agent producing exactly the same effects, no other oil or combination of oils or of other constituents bringing about the same general results. Its alterative, tissue-building and tissue-repairing, as well as general nourishing qualities are marvelous, but as to just how these results are brought about we can but theorize.

In partial explanation of its action is the fact that in the case of no other known oil are osmosis and endosmosis so rapid. It is emulsified more rapidly than any other known fat in the presence of pancreatic juice and glycerin without any gum. It is thus more easily digested than any other known oil and possesses, therefore, greater nutrient qualities. If this were all of its beneficial properties it would in its sphere be without a peer, but when, in addition to

the nutrient and digestive function, we observe its prompt alterative effects, we must be convinced that we are dealing with a therapeutic agent which, while not thoroughly understood, has for ages been of incalculable value to the human race and one whose virtues can probably never be thoroughly explained.

Its nerve-building energies are perhaps in a greater part due to the phosphorus it contains, making it extremely valuable for shattered nervous systems as well as in rachitic cases; its prompt and thorough alterative effects observable in the strumous, scrofulous, phthisical and rheumatic are due probably to the continued iodine and bromine, as well as perhaps to other constituents the therapeutic value of which is not known.

When we try to compare the virtues of the old oil with that now manufactured, I think there are several facts which indicate that the former was therapeutically the more efficacious. In my boyhood I took cod-liver oil daily for months at a time extending over a period of several years. In those days the two oils were in competition, the steam-prepared, yellow oil was the more pleasant to the taste and to smell, but our "family doctor," as well as all of our experienced friends, advised the old, browner, more odorous and more fishy oil; the consequence was I began early to enquire why there was any need to take the more disagreeable oil. All I learned was that its effects were more prompt and more thorough, that in the opinion of the elder doctors of that day the new oil was deficient in some of the healing virtues of the old, and their belief was so universal that I early became convinced that this was truth and not merely a prejudice.

Tending to the same conclusion, if we look over the medical literature of the period of 1855 to 1870, we find that as the old oil gave way to the new, numerous manufacturers placed preparations of cod-liver oil on the market purporting to be fortified with one or more of its active principles, especially do we notice *iodized oil*, *phosphorized oil* (3), used in varying strengths up to $\frac{1}{4}$ grain to the ounce of oil, and *brominized oil*. It is significant, to say the least, that this flood of fortified oils should appear at this time immediately after the adoption of the new steam process. It would seem that some lack in the new oil must have been detected at once. This endeavor to improve on the nutriment and alterative virtues of the new cod-liver oil continues to quite an extent even up to the present day.

Between the new and the old oils there are but two fundamental differences. (1) The old oils contained a much greater proportion of the decomposition products, such as the alkaloids (4), than the new oil. These alkaloids are by some considered as abnormal (5) and by

others as the active principles. (6) (2) The old oils necessarily retained more of their volatile constituents than the new oils, as in the process of preparation of all the old medicinal oils no heat of any kind was used, subsidence and pressure only being the means of expression, whereas all of the new oils are subjected to a long-continued heat of about 180° F., and often much above this point; thus the volatile constituents, especially the halogens and the phosphorus, are in a great part removed in the preparation of all the modern cod-liver oil.

Convinced of the above facts, some years ago I began to contrast the therapeutic effects of the new oils as compared with the same oil fortified by the addition of iodine, bromine and phosphorus, and I was soon satisfied that their addition seemed to intensify the normal therapeutic virtues of the oil. Later on, not being convinced of the distinctive value of the bromine in the preparation, I omitted it, retaining only the iodine and the phosphorus.

Feeling sure of my position in this matter, I gave my formula to a Philadelphia druggist with the request to so combine these elements with the oil as to retain its normal pale color while endeavoring to improve both the odor and palatability.

As the result of our experiments we succeeded in producing a preparation which we have designated *Oleum Morrhuae Iodo-Phosphoratum*, a clear, light-yellow oil, flowing perhaps more freely than most good oils, having less of the fishy and less of the hydroxylation odor than usual and a much less marked fishy taste. Each table-spoonful of this oil is fortified with one one-hundredth of a grain of pure free phosphorus and one twelfth of a grain of pure free iodine, neither ingredient being at all noticeable either to taste, sight or smell, and yet by the method of ultimate analytical analysis all recoverable therefrom.

As having perhaps an important bearing on this question, I will call attention to an alterative preparation rather extensively used in our city, quite constantly by the late Dr. Pepper and by him sometimes called a summer substitute for cod-liver oil. I refer to *Vini Iodi Comp.*, each teaspoonful of which contains one one-hundredth of a grain of free phosphorus and one-sixth of a grain each of free iodine and bromine. It is typically an alterative. It has little or no effect upon the bodily weight, except inasmuch as it stimulates growth by restoring to the tissues healthy action. In no sense is it a nutrient and thus differs markedly from cod-liver oil. It is extremely valuable as a substitute for all those patients usually benefited by cod-liver oil, who, on account of the extreme heat of the summer or a temporarily abnormal sensitiveness of the stomach-walls, or a nervous excitability

of the palate, are unable for the time to take oil. It seems to have all the virtues of the oil without its nourishing and fattening qualities.

I have found this fortified oil more easily taken than others. It is less repulsive to the taste and smell, and in many cases patients soon learn to like its taste as well as its effects. It is more easily digested and much less liable to be followed by eructations. This increased digestibility is no doubt due to the soothing influences of the iodine on the stomach-walls. It is more prompt in its systematic effects in building up the tissues. Its alterative effects are more prompt and more pronounced. The prescription reads as follows:

Olei Morrhuae Iodo-phosphoratum. Oi.

S. One tablespoonful at night, only on retiring, preferably followed by a taste of lemon.

For a period of perhaps seven years I have constantly been prescribing it, using it in a thousand or more cases, and I have had but two or three instances in which patients insisted that they could not take it. I have not observed a single case in which it had a bad effect, and in every case I believe I noticed an advantageous effect markedly beyond that which I formerly observed in similar cases when using the plain oil in equal quantity. I have named it *Iodo-Phosphorized Cod-Liver Oil*, and usually write my prescriptions as here noted, rarely ordering it to be taken more than once a day and then at bed-time. When necessary to use it oftener I prescribe it at meal-time in addition, but I do this rarely. Occasionally I have the patient take a little whisky with the oil, but almost invariably advise that a piece of lemon be used after taking the oil.

I believe this matter of prescribing the oil at night, the last thing at night just before slipping into bed and taking the lemon thereafter, to be a very important one to the patient, making its administration more pleasant and its digestion more rapid.

This preparation of oleum morrhue iodo-phosphoratum is a perfectly stable preparation made agreeable by the addition of aromatics, containing 95 per cent. of pure Lofoten cod-liver oil, each ounce containing one-sixth of a grain of pure free iodine and one-fiftieth of a grain of pure free phosphorus. It will keep indefinitely if stored in a cool place and tightly corked, but, like all cod-liver oils, if kept too long, for a few years, for instance, or exposed to the light, the fatty acids become oxidized, in other words, hydroxylation occurs and the oil then becomes unpleasant to the stomach.

No cod-liver oil, however, can be expected to keep well without hydroxylation for a much greater period than a year after its preparation, and this preparation of oleum morrhue iodo-phosphoratum must

in this respect be judged by the ordinary standards. Convinced that, if this preparation be tried faithfully and used as advised, it will meet with approval, I take pleasure in recommending it to the notice of the profession.—*Medical News*.

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1723 Walnut Street.

The Prophylactic and Curative Action of Urotropin.*

BY DR. ZAUDY, ASSISTANT PHYSICIAN.

Urotropin, introduced into practice by Nicolaier, needs no recommendation nowadays. Its favorable effect in most of the bacterial diseases of the urinary passages is so generally recognized, and the clinical effects obtained from its use agree so thoroughly with the laboratory results, that the record of cures of individual cases is of no special interest. Professor Nicolaier himself has recently** collected the very voluminous literature of urotropin, and has added thereto an extensive series of new experimental and clinical observations. His article is also a useful resumé of the rules that govern the use of the drug.

If I report a clinical case here in spite of these facts, it is for two reasons. In the first place an opportunity to convince oneself of the effect of the urotropin by post-mortem examination is certainly a rare occasion; and on the other hand the prophylactic and not alone the curative effect of the drug was unexpectedly great, as the autopsy revealed.

The patient, A. W., was an engineer at A. On May 11, 1900, he was referred by the surgical clinic, to which he had been admitted short-before, to the medical clinic. He presented a marked picture of para-

*From the University Medical Clinic at Göttingen of Professor Ebstein,
Medical Privy Councillor.*

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**Experimental and Clinical Researches Upon Urotropin, *Zeitschrift für klinische Medizin*, Vol. 38, p. 350. (Festschrift to Professor Ebstein, Privy Councillor, p. 66).

plegia. Both legs were entirely paralyzed and anesthetic; there was paralysis of the sphincter ani, through which feces, mostly very thin, passed involuntarily; the detrusor vesicæ did not functionate, though the sphincter vesicæ seemed to do its work at first. A large part of the intestinal tract was also paralyzed, as was shown by the permanent and severe tympanites. The absence of thermic and tactile sensibility extended upwards from the thighs to just under the navel. Sensibility to pain was still present at first over the lower half of the abdomen, though reduced in acuity. At the time of his reception the patient had two superficial losses of epithelium upon his buttocks.

I shall give only a short synopsis of the course and complications of this grave affection. Fever was at first constant, but later apparent only in the evening. Cardiac weakness was a permanent condition. The sensorium became dulled. Then there appeared trophic disturbances on the most varied portions of the body; edemas and sanguinous bullæ developed; and the formation of several extensive gangrenous areas could not be prevented by the most careful prophylactic measures. In fact the disease took its usual and downward course. Finally, without any external lesion, there appeared on the right thigh the signs of an extensive, deep-seated phlegmon, over which a large area of skin became gangrenous upon the surface. The patient's condition was a dreadful one; and his nursing became a most difficult task. The sick man himself, however, had not the slightest sensation of anything being wrong during the entire course of the disease.

The patient was in the medical clinic for six weeks. In contradistinction to the unfavorable and relatively slow course of his symptoms above mentioned, the abnormal conditions of the urinary apparatus soon began to improve in the most satisfactory manner; and we might almost say that this improvement became even more marked during the treatment. The urine was drawn with the catheter twice daily, a Nélaton being employed at first and a metallic instrument later on. Its amount was normal and its reaction acid from the first. It showed a distinct albuminous cloudiness when tested with acetic acid and potassium ferrocyanide; and the microscope revealed numerous leucocytes and bacteria. All this was not remarkable in view of the nature of the disease; and it became less so when it was shortly observed that an abundant amount of sanguinolent pus was voided from the urethra, the quantity of which could be much increased by the exercise of ascending pressure from the root of the penis to the glans. The discharge contained no gonococci. The abscess whose presence was shown by this symptom was believed to be in the prostatic urethra, a conclusion which was confirmed by further investigation by other methods.

At this spot in the urinary passage the catheter encountered an obstacle from the very beginning which always had to be passed by repeated advances and withdrawals of the instrument, and which seemed to be essentially a false passage. Additional evidence of the correctness of this view was afforded by the fact that there were always a few older blood clots in that place, which came out entangled in the eye of the catheter. Such was the condition of the patient's urinary passages at the time when he was received at our clinic.

From the first day until the time of his death (May 11 to June 20, 1900), the patient, besides other treatment, was given 0.5 gram ($7\frac{1}{2}$ grains) of urotropin in tablet form three times daily. He took altogether nearly 60 grams (2 ounces) of urotropin; and though the amount of nourishment which could be administered was but very small, he never objected to the tablets. By-effects which could be attributed to the drug were never seen; but of course it would have been difficult to demonstrate them in view of the severe general disease and the apathy of the patient. Even in so short a time as eight days after beginning the treatment no more pus was voided by the urethra, and catheterization could be effected more easily. After one week's further treatment the urine began to pass involuntarily from the bladder without that organ being full; there was greater resistance to the catheter again, and after the evacuation of the urine pus flowed from the bladder. The amount of the pus increased during the next few days; and on introducing the catheter through the prostatic region the instrument seemed to pass through softened tissue. It was evident that a new abscess formation was in progress; and since the pus only flowed from the catheter with the last few drops of the urine, its source was not the bladder itself. It would not, of course, have been surprising had this been the case; the bladder had opportunity enough to become infected. The constant defecation in bed, and consequent soiling of the genitals; the extensive decubitus; the inflammatory edema of the one thigh and the adjoining skin of the abdomen; the edema of the prepuce; the constant transference of pus by means of the catheter from the prostatic region to the bladder; all these were complications from which the anterior segment of the urethra could probably not have been permanently protected, in spite of carefully cleansed glans, sterile catheters, and sterilized oil. And pus organisms present there would reach the bladder without difficulty by means of the catheter, and perhaps accentuate the action of the prostatic pus. Nevertheless the excretion of the pus in the urine diminished again; and before the patient died it was certain that whilst the autopsy might reveal an affection of the bladder of moderate grade, it would not show a severe inflammation.

On the day after the patient's death the post-mortem made by Privy-Councillor Dr. Orth revealed the following facts in regard to this interesting point:

Marked edematous swelling of the lower extremities; large decubital necrosis of both feet and above the achilles tendons, and the same over the sacrum, especially on the left side. Bullæ of the epidermis and sanguinous suffusion on the posterior and inner side of the right thigh. Above the sacrum on the right side, and under unchanged skin, is an immense pus cavity stretching towards the thigh, and filled with a mass of bloody and purulent foul-smelling matter. Surface of the gluteal muscles colored dark grey and infiltrated with pus. On the left side in the corresponding location is another phlegmon, more intermuscularly located. Here also the muscles are changed into a soft, dirty grey mass. In the middle of the thighs upon both sides edema only; no suppuration. A large cavity filled with pus and containing, like the previous one, large shreds of fatty tissue, surrounds the entire end of the rectum and the anus. Inspection of the anterior surface of the body shows that on the right thigh the necrosis of the skin and the phlegmons extend to the inner side of the limb. The knee joint contains bloody looking pus. Over the internal condyle is an abscess of the soft parts. The inguinal lymphatic glands are enlarged. On the left side also there is suppurative inflammation of the knee joint with phlegmons of the surrounding tissues.

The urinary bladder is firmly contracted, and contains only a very small quantity of very slightly purulent fluid. The cavities between the folds of the contracted bladder are vividly reddened. Between the muscular tabeculæ are various small diverticulum-like dilations. Severe inflammatory changes are not present. The entrance of the urethra shows nothing noticeably abnormal; but above the folliculus seminalis there are on both sides openings of false passages. The one on the left side is somewhat the wider, but leads to a passage only $1\frac{1}{2}$ cm. (3-5 inch) long; the one on the right is $3\frac{3}{4}$ cm. ($1\frac{1}{2}$ inches) long, and ends in a blind sack behind the swelling of the ureter. The pars nuda and the posterior portion of the pars cavernosa of the urethra show a brownish discoloration; then follows grey mucous membrane; the anterior portion is greyish-brown again. A longitudinal section shows nothing unusual.

Section of the prostate shows suppurative foci on the right side, and the prostatic veins contain loose thrombi of mixed appearance. The mucosa of the left ureter, the pelvis, and the calices of the left kidney are indeed here and there a little more vascular than usual, and the pelvic membrane has a few minute hemorrhages. But there are abso-

lately no serious lesions of the parenchyma of the kidney or the urinary passages. The conditions are the same upon the right side.

Diagnosis as to the urinary organs: Urocystitis without serious lesions; punctiform hemorrhages in the pelvis of the kidney, but no other signs of pyelonephritis.

These post-mortem findings speak for themselves, and require no further elucidation. They show more plainly than any clinical symptoms that the dangers which threatened the urinary passages from the various sides were entirely warded off, practically, until the very end. It is the universal experience that patients suffering from paralysis and anesthesia of the lower half of the body mostly succumb to the severe cystitis and rapidly consecutive pyelitis. The kidneys are usually severely affected. That this was not the case here, that the post-mortem revealed that the urinary apparatus was not to any great degree involved, must necessarily be attributed to the action of the urotropin. It has affected exactly the same thing that it does, almost invariably, in cases of bacterial disease of the urinary passages without the serious complications which were present in our case. The fact that the use of urotropin was begun as early as possible, and was continued until within a few hours of the patient's death, seems to us to be important.

I am indebted to Privy-Councillor Professor Ebstein, my revered chief, for permission to publish this observation.

Abstracts.

ACETANILID HABIT. A case is reported by Dr. G. W. Gaines (*N. Orleans Med. and Surg. Jour.*). The patient was a negro to whom acetanilid had been given several years previously for the relief of an attack of rheumatism from which he suffered. Finding relief while taking the drug, and the pain returned on its being discontinued, the patient began to use the drug regularly every day. During the last several months he has been consuming the acetanilid at the rate of 2 ozs. per week. Whether any ill effects have been noticed the author fails to state.

ZINGILEREN. H. von Soden and W. Rojhan (*Jour. Soc. Chem. Ind.*) report having obtained from ginger oil a new sesquiterpene, to which they give the name zingiberen. It is a colorless mobile levorotatory oil; its specific gravity is 0.872 at 15° C.; it is readily soluble in ether, alcohol, and benzine; and at the ordinary pressure it boils with slight decomposition at 269°-270° C. It differs from other sesquiterpenes by its low specific gravity.

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Address HARRY B. FERGUSON, PHAR.D., 115 West 68th Street, New York City.

EDITED BY HARRY B. FERGUSON, PHAR.D.,

WITH THE COLLABORATION OF

CHAS. RICE, PH.D. H. H. RUSBY, M.D. V. COBLENTZ, PH.D. GEO. A. FERGUSON, PH.D.
GEO. C. DIEKMAN, M.D. JOHN OEHLER, PH.G. SMITH ELY JELLIFFE, M.D., PH.D.

Physical Therapeutics.

According to the *Hospital*, the establishment of a journal devoted to physical therapeutics seems to suggest that in the future much more attention will be paid to this branch of medicine than has been the case in the past, although it is, perhaps, to be regretted that anything should occur to make people regard the measures included under this term as a specialty apart from ordinary practice.

We are all ready enough to laugh at the pompous old gentleman who plays the part of the physician in the older novels and story books. Nevertheless, we may express our belief that we have not even yet shaken ourselves free of some of the evils and some of the prejudices which date back to what may be called the gold-headed-cane period of medicine, one of the worst of which is the tendency to confine our therapeutic efforts to pills and mixtures, instead of using every means which experience, and not merely the experience of the schools, shows to be of service. So great, however, is the faith of the public in the ever-present bottle of physic that if a medical man attempts to personally look after the treatment of his patient, to do a little massage, to apply

resistance exercises, or to look after the giving of the bath, there are plenty of people—and among his professional brethren there are any number—who are quite ready to say, "Yes, Mr. A. is a very good fellow, most kind and attentive, but is he not a bit of an old woman?" Experience teaches that more credit is gained and less responsibility is undertaken by ordering some medicine and leaving the patient to fight it out as best he may than by personally undertaking physical treatment. The patient feels that the practitioner is acting "just like a London physician," and what more can anyone desire? So the physic bottle and the pill box still reign in the land, as the sign and the emblem of orthodox medicine; all of which is very wrong.

Disease may be treated in several ways. First, there is the extremely ignorant, totally empirical, but sometimes extraordinarily successful method, which we may call the alterative plan; a method allied to the common trick of giving one's watch a good shake if it does not go. One gives the poor man a strong pill, or a Turkish bath; if he is fat one starves him, or if thin one gives him a course of overfeeding; while a lazy man one sets upon a bicycle with thirty miles a day before him. Any way, one gives him a good shake-up, and so great is man's vitality that very often he is all the better for it. Of course we have no sympathy with this sort of treatment, notwithstanding the fortunes which come to those who carry it out in an impressive manner. Then there is the treatment which depends for its success upon the fact that many of our diseases are due to toxic materials of one sort and another, and that some of these materials can be either neutralized or removed by drugs. This is at least "scientific." It fairly smells of the test tube and the laboratory; and, moreover, it is easy, for difficult as it must be to discover a real antidote to these various hypothetical toxins, it is by no means difficult to persuade both oneself and the patient that one has got hold of the very thing. Then there are many other methods according to which bottles of medicine may be brought to bear upon disease, and lastly, there is the line of treatment which aims at removing the toxins, at sweeping out the "effete materials" by which disease is caused, and at "stimulating normal function," partly by altering the physical environment, for example, by the application of heat, light, electricity, water, vapor, etc., and partly by the use of movements and exercises, by aid of which the different parts of the body are made to react upon, or "stimulate" each other. Such physical therapeutics, however, mostly require apparatus, and so smell of quackery—such are the restrictions imposed upon our practice by the gold-headed-cane ideals of medical life—or they are suggestive of massenses, medical rubbers, and bathtmen, people with whom etiquette and even

some dicta of the General Medical Council warn us to form no alliances. Hence, unless particular methods of physical treatment have become crystallized into fixed routines, so that they can be prescribed *en bloc*, they are made but little use of. At a number of places certain special methods of treatment are adopted which are as easy to order as a pill—and so they are ordered. Nothing is more simple, and professional withal, than to prescribe a course at Nauheim, or Aix-la-Chapelle, or Droitwich. But to superintend the exercises or the baths or the inunctions, and so to cure one's patient oneself, is quite another thing. First of all it is a good deal of trouble, but above all it is a little outside ordinary professional usage. We cannot but think, however, that English medical men will before long find out the advantage of taking under their own charge the whole treatment of disease, and not contenting themselves with the comparatively small part which is involved in prescribing what should be done.

Abstracts.

COLOR OF WINDOW BLINDS. The remarkable and widely varying properties of the elementary colors which compose white light suggest, says Prof. Longro, that the employment of screens as in the blinds placed over our windows should be founded on a scientific basis. Our knowledge of the properties of each individual section of the spectrum is not exact, but this much we do know, that the rays of least refrangibility, the red rays, are without direct chemical effects; they occur at the heat end of the spectrum. On the other hand, the rays of the highest refrangibility contain the violet rays which chemically are exceedingly active. It is these rays which are concerned in photography and also in the great processes of vegetable nutrition and growth.

The object of blinds is, of course, two-fold—to keep a room cool and to screen out some of the light, so as to avoid the bleaching of coloring materials of the carpets and furniture. At the same time sufficient light must be admitted, so that the occupant may see without difficulty. What, then, is the best color for the purpose? Since light exerts the peculiar action due to the actinic rays which materially and wholesomely affects the air of a dwelling-room, care should obviously be taken not to exclude all the rays that are so concerned. Thus ruby or orange-red material would be contra-indicated. Abundance of light is inimical to the life of micro-organisms, so that a material in some shape of a compromise should be selected. The best for this purpose is probably a delicately ochre colored fabric. This would screen part of the active light

rays, and, if of a fair thickness, the greater part of the heat rays, while admitting sufficient active rays to allow of wholesome effect upon the room and its surroundings. Venetian blinds do not allow of the graduation, which is desirable, of the tone of light that may be adjusted with cloth fabric. As is well known, exclusively red light has been used as a therapeutic agent, and apparently with encouraging results, in measles.

STRUCTURE OF GALLS. E. Küster describes (*Flora*) a great variety of galls on different plants, and gives the following summary of their structure. Those galls which result from the superficial growth of the part of the plant attacked are always of simple structure; a great histological differentiation is found only in those which are the result of growth in thickness. The epiderm is the tissue which offers the longest resistance to the action of the gall-irritant; the foci of formation of the gall are the mesophyll, the cortex, and the pith. The most important change which the epiderm undergoes is the formation of hairs. In the fully developed gall itself the epidermal tissue is greatly developed; the cork and bark but feebly. The stomates are often developed in galls as air-fissures which remain permanently open; in some willow-galls true lenticels are formed. The assimilating tissue is usually but feebly developed; mechanical tissues are almost invariably present in those galls which are produced by growth in thickness. There are no sterioids. The cells of the galls themselves may resemble in form and arrangement those of the normal parts of the plant affected, or the arrangement may be altered, or forms of cells or of tissues may arise which are not present in the normal part of the plant. The gall-irritant is a compound of various sources of irritation.

TESTS FOR IODOFORM. Deniges (*Bull. Soc. Pharm. Bordeaux*) has devised the following test for iodoform: The sample is treated with ether, the solvent evaporated and to the residue is added a few drops of dimethyl anilin. If iodoform is present, the liquid becomes of a deep brown color, and on warming almost to boiling and adding a little alcohol, the product assumes a violet or red tint, according to the amount of iodoform present. The absorption spectrum of the liquid shows the characteristic methyl violet band, and with a hand spectroscope 0.1 milligram of iodoform can be readily detected. If the iodoform is mixed with substance soluble in ether like guaiacol, the violet coloration is hardly discernible, but the spectrum shows the characteristic band. The author suggests that the formation of the brown color in the first step of the process affords a means of colorimetric assay.

SULPHONAL POISONING. According to Dieterich (*Therap. Monats.*) sulphonal is by no means so free from toxic action as is generally supposed. At least thirty cases of death from the use of the drug have been recorded in medical literature, he says. The dose which produces these harmful effects appears to be very variable. Oestreicher quotes a case in which a patient took 1,500 grams of sulphonal in six years without any ill effects. On the other hand, Schulz reports a case which ended fatally, in which only 16 grams were given in a month, and Helweg, another fatal case resulting from the administration of 90 grams in three months. Numerous similar cases have been recorded. In the majority of these, the patients were in a weakened condition, anæmic, with much impaired digestion, so that the sulphonal, which, in healthy individuals is dissociated and re-absorbed with difficulty, in these cases acquired a cumulative action which terminated disastrously. The symptoms of poisoning are intestinal pain, nausea and constipation. The urine is colored a deep cherry-red. This coloration is often the first indication of the commencement of the toxic action.

ELECTRIC LIGHT AND THE EYE. Roy (*Med. News*) reviews a number of cases of traumatism to the eye caused by electric light flashes. These generally caused temporary blindness lasting a few moments, and upon examination there was found more or less retinal irritation with contraction of the pupil and conjunctivitis. Pain was often severe and came on several hours after the accident. The author quotes Wildmark's researches to show that the irritation is due to the ultra-violet rays, which, as is known, exert a similar influence on the skin. This raises the question as to whether this same cause is not responsible for the X-ray injuries to the skin. According to the observation of Dr. Roy, the Welsbach gas light has proven more satisfactory than the electric light, even the incandescent form but its intensity should be modified by proper shading. This is explainable under the hypothesis that domestic lights are injurious in proportion to the amount of ultra-violet rays they contain.

ANILIN POISONING. Landouzy and Bronardel (*Presse Méd.*) call attention to the widespread use of the anilin dyes in the arts and the possibility of poisoning when the articles so prepared are taken into the mouth. They report several cases of children poisoned by sucking the yellow stain from their shoes, which it transpired, was obtained by the use of yellow anilin dye. They draw the attention of hygienists and medico-legal experts to the possibility of this form of poisoning.

Alumni, College and Class Notes.

CONTRIBUTORS.

Alumni Association,	WM. A. HOBURG, Jr., Ph.G., 115 West 68th St., N. Y.
Alumni Notes, Socials, etc., and Classes prior to 1893,	CHAS. S. ERB, 121 Amsterdam Ave., N. Y.
Bibliography,	ADOLPH HENNING, Ph.D., 68 William St., N. Y.
Class '93,	EUGENE F. LOHR, Ph.G., 508 Marcy Ave., Brooklyn, N. Y.
Class '94,	FRANK N. POND, 226 Ninth Ave., N. Y.
Class '95,	GEO. J. DURR, Ph.D., Randalls Island, N. Y.
Class '96,	CHAS. G. H. GERKEN, Ph.D., 109 S. 4th St., Brooklyn, N. Y.
Class '97,	E. A. MEINECKE, Ph.G., 14 Platt St., N. Y.
Class '98,	T. B. FURNIVAL, Ph.G., 115 West 68th St., N. Y.
Class '99,	THEODORE E. MEYERS, Dorranceton, Pa.
Class 1900,	ROBERT B. LIVINGSTON, 115 West 68th St., N. Y.
Class 1901,	ALBERT C. THOMPSON, 115 West 68th St., N. Y.
Post Grad. 1900,	FANNY A. BLAN, Ph.D., 115 West 68th St., N. Y.
Legal Notes,	H. A. HEROLD, Ph.G., 108 Fulton St., N. Y.

Alumni Notes.

REGULAR ALUMNI MEETING, NOV. 14th 1900.

President Chas. S. Erb in the chair. Secretary Rudolph Gies being absent, the chair appointed B. R. Danscha secretary pro. tem.

The following members were present:

Messrs. Hohenthal '81, Schweinfurth '85, C. S. Erb '86, Schlegel, Kirk '94, Herold '94, Danscha '95, Borggeve '92, Wendler '98, Mohr '99, Stubenranch '99.

Minutes of last meeting read and after discussion approved.

Treasurer's report read and, upon motion, approved and ordered to be placed on file.

Dinner Committee reports that all arrangements for the Dinner have been completed, and that the same will be held at the Arena on Wednesday evening, November 28, 1900.

Report accepted.

Ball Committee reported progress.

Entertainment Committee reports that the regular monthly receptions will begin with the one on Wednesday, November 21, 1900, and that the same will be held every third Wednesday of the month throughout the college year.

Upon motion, report was accepted.

Bill for secretary's expenses for postage (\$5.00) presented and referred to Auditing Committee (Messrs. Hohenthal and Wendler) and after being found correct, same was ordered to be paid.

The fall graduates were elected as members of this Association, the secretary being ordered to cast one affirmative ballot for each:—Martin D. Jewell, 1900; Wm. Newton Bradner, 1895; Albert M. Beckary, 1898.

Motion made, seconded and carried that Bruno R. Danscha be elected as secretary of the Alumni Association in place of Rudolph Gies, resigned, and that the treasurer cast one affirmative ballot for him. The same being cast, he was declared elected.

The resignation of Secretary, Rudolph Gies as secretary of the Association read, and motion made, seconded and carried to accept the same, and the secre-

tary pro tem. to be instructed to write Dr. Gies, expressing regrets, with thanks of the Association for services rendered.

Motion made, seconded and carried that the secretary write to Dr. Ferguson, expressing regret at his recent illness, with best wishes for a speedy recovery.

Motion to adjourn carried.

B. R. DAUSCHA, *Secretary*.

'94 Notes.

MURISON-PLATTO.

On Wednesday evening, at the First Baptist Church, in the presence of a large number of invited guests and friends, occurred the marriage of Robert F. Murison, a prominent young business man of Brooklyn, N. Y., and May Belle, only child of Mr. and Mrs. C. V. L. Platto of this place. Long before the hour announced for the ceremony, the sacred edifice was filled, the bride having endeared herself to a host of friends by her genial, sympathetic nature, and consistent, faithful attention to every duty. The greater portion of her life has been spent in this place, and she devoted much of her time to church work, besides having for the past seven years been superintendent of the Junior Christian Endeavor Society, organized through her efforts. She is a graduate of the high school of this place and of the Kindergarten training school of Amsterdam, and is highly esteemed by all who know her.

'98 Notes.

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Post Graduate Notes.

Descension from chemical to bacteriological laboratory caused no injurious results.

The *only* gentleman in the P. G.'s is Mr. *Sullivan*.

Queer things are seen by the future microscopists. May claims he has observed *automobiles*.

What a physical relief to know that many flights of stairs have been cut off from our daily ascension and disposition of bellows which supplied sufficient wind to enable we'uns to reach the top floor.

INDEX TO VOL. VII.

A

- Agar Agar and its preparation for Bacteriological purposes, 231.
- Abstracts, 11, 69, 76, 106, 123, 147, 256, 273, 276.
- Addendum to the British Pharmacopoeia, 255.
- A good thing, 172.
- Alumni annual report of the treasurer, 152.
- meeting, 15, 61, 92, 127, 278.
 - merrell cup, 149.
 - president, 85.
 - outing, 130, 150.
 - officers and committees, 81.
 - prizes presentation, 87.
 - reception, 1900, 37, 81.
 - social, 16.
 - treasurer, 38.
- A menace to the pharmaceutical education, 164.
- Animal wool and hairs, 189, 206, 223.
- A poisonous plant related to Phus., 161.
- Apology, 219.

B

- Bacteriological purposes and prep. of Agar Agar, 251.
- Bamboo cane, examination of, 34.
- Belladonna powd., microscopical characteristics, 8.
- Bibliography, 12, 148.
- Boric Acid, the so-called danger from its use in preserved foods, 53, 70.
- Book Review, 36, 187, 217.
- Board of Pharmacy Examination questions, 55, 98, 166.

- Botanical origin of Coca leaves, 239.
- Business manager, our new, 78.
- British Pharmacopoeia, new addendum, 255.

C

- Candle tree, the, 60.
- "Charity's" Invitation, 165.
- Chlorides in Wine, Est. of, 24.
- Class prior to "93," 17, 131, 174, 197.
- Class Notes, "93," 17, 62, 93, 131, 153, 174, 197.
- "94," 18, 62, 132, 154, 197, 220, 280.
 - "95," 18, 39, 132, 154, 174.
 - "96," 19.
 - "97," 19, 40, 93, 133, 154, 175, 198, 220.
 - "98," 63, 93, 261, 280.
 - "99," 19, 64, 133, 155, 176, 262.
 - "00," 20, 41, 94, 155, 176, 198, 221.
 - "01," 21, 42, 65, 95, 134, 156, 177, 221.
- Cod liver oil increasing therapeutic value by the add. of free Iodine and free Phosphorus, 263.

- Cocoa leaves, botanical origin, 239.
- College notes, 15.
- Coloring matter of paper, Examination, 48.
- Commencement, 10th annual, 108.
- Commendable stand, 126.
- Court definition of drug store, 195.
- Cotton fiber, microscopical examination, 30.

D

- Distinction between official hamamelis and that collected in spring, 52.
- Dispensing capsules in dry form, 216.

E

- Esparto paper, microscopical examination, 32
- Estimation of Uric Acid in Urine, 157, 201.
- Estimation of Urea, 1.
Sulphates in Urine, 27.
- Examination of the coloring matter of paper, 48.
- Examination of Bamboo cane, 34.
Cotton fiber, 30.
fibers, 29.
Esparto paper, 32
Hemp fiber, 30.
Jute, 34.
Linen fiber, 30.
Oats, straw, 32.
Paper Mulberry tree, 34.
Rice straw, 32.
Rye straw, 32.
Straw, 31.
Wheat Straw, 32.
Wood fiber, 46.
cellulose, 47.
question of the Board of Pharmacy, 55, 98, 166.
Senior class N. Y. C. P., 1900, 140.

F

- Fanatics and Legislation, 14.
- Fatal poisoning by Oil of Wintergreen, 187.
- Fiber, Microscopical Examination, 29.
- Filling of Paper, test for, 49.
- Fur and Hair Dyes, organic, 77.

G

- Graduate of 1900, to the, 91.
- German Pharmacopocia, 188.

H

- Has commercialism superseded Pharmaceutical training, 58.

Hair and Fur Dyes, organic, 77.

Hamamelis, distinction between official and that collected in spring, 52.

Hemp fiber, microscopic Examination, 30.

Hop fibers, 48.

Hyocyamus powder, microscopical characteristics, 8.

I

Increasing the therapeutic value of cod liver oil by add. of free Iodine and free phosphor, 263.

J

Jute, microscopical Examination, 32.

K

Kappa Psi notes, 22, 96, 134, 156, 175, 222.

Kays Kurious Kolumn, 66, 97, 134, 178, 200.

L

Linen fiber, microscopical examination, 30.

M

Materia Medica teaching, 245.

Menace to Pharmaceutical education, 164.

Metric system, 35, 179.

Microscopical Examination of powder Hyocyamus and Belladonna leaf, 8.

Microscopical Examination of Cotton, 30.

Bamboo cane, 34.

Esparto paper, 32.

Fibers, 29.

Hemp fiber, 30.

Jute, 34.

Linen fiber, 30.

Oat, Rye and Wheat Straw, 32.

of Paper, 28, 45.

Paper Mulberry tree, 34, 45.

Wood Cellulose, 47.
 Wood fiber, 46.
 Straw, 31.

N

Necrology, 163.
 Notes from Newburg, 173.
 Notice, 196, 219.

O

Oat straw microscope, examination, 32.
 Obituary, 39.
 Our new business manager, 78.
 Officers and Committees of the Alumni
 Asso., 81.
 Organic Hair and Fur Dyes, 77.

P

Paper, Microscopical examination of
 28.
 Paper with cellular structure, 50.
 Parchment Paper, 48.
 Phosphates estimation in Urine, 101.
 separation of Earthy from Al-
 kali, 106.
 Phi Chi notes, 22.
 Pharmacopoeial German, 188.
 Physical Therapeutics, 274.
 Post-graduate notes, 21, 97.
 Class 1900, 21, 44.
 1901, 199, 221, 280.
 Poisonous plant related to Phus, 161.
 Poisoning by Oil of Wintergreen, 187.
 Poisonous Plants, 36.
 President's letter, 59.
 of the college, 79.
 Alumni Asso., 85.
 Program Alumni day reception, 83, 87.
 Preparation of Agar Agar for Bacter-
 iological purposes, 251.
 Prophylactic and Curative action of
 Urotropine, 269.
 Pre-requisite Clause, the, 125, 139.
 Prizes, Alumni, 87.

R

Report of the delegates of the college
 of Pharmacy of the city of N. Y. to
 the convention of the 8th decimal re-
 vision of the U. S. P., 135.
 Rice straw, microscopical exam., 32.
 Rye straw, microscopical exam., 32.

S

Senior examination question N. Y. C.
 P., 1900, 140.
 Seventieth annual convention, 108.
 Sizing of Paper, the, 49.
 Small checks not good, 238.
 Straw, microscopical examination, 31.
 Suphates, estimation of in Urine, 27, 67.

T

Therapeutics, Physical, 274.
 The so-called danger from the use of
 Boric Acid in preserved food, 53, 70.
 The new German Pharmacopoeia, 188.
 The Botanical origin of Coca leaves,
 239.
 The teaching of Materia Medica, 245.
 Treasurer of the Alumni Asso., 88.
 Tooth Brush plant, the, 60.
 Test for the filling of Paper, 49.

U

Urine analysis by the Pharmacist, 1,
 23, 67, 101, 157, 201.
 Urea, 1.
 Estimation of, 1.
 Of Chlorides, 24.
 Uric Acid, 157, 201.
 Qualitative, 159, 201.
 U. S. P. Convention, 139.
 Urotropin, action of curative Propy-
 lactic Properties, 269.

W

What is Life, 194.
 Wheat Straw Microscop. Exam., 32.
 Wintergreen Oil poisoning, 187.
 Wood Cellulose examination, 47.
 Wood Fiber examination, 46.

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"In certain forms of Uterine Hemorrhage it is almost a specific," says Prof. H. J. Holdt (*Med. News*, April 8, 1899.)

THIOCOL

"The favorable action of Thiocol in Phthisical cases becomes manifest very soon by the perceptible increase of appetite and strength," says Dr. Schwar z (Klin. - ther. Woch., Nov. 19, 1898.)

TANNOFORM

"We have not as yet met with a single case of fetid sweating feet that has refused to yield to the action of Tannoform," say Drs. De Buck and De Moor (*Belgique Medicale*, 1896, No. 33.)

Creolin-Pearson

"It is certainly true that Creolin is the least poisonous of the powerful antiseptics," says Hare's *Therapeutics*, p. 388.

EUQUININE

After praising Euquinine for its tastelessness and efficiency, Dr. W. R. D. Blackwood says: "Try Euquinine, my readers, and see for yourselves." (*Med. Sum.*, Aug. 1, 1899.)

TANNALBIN

"The stringent effect of the Tannalbin was found to be absolutely certain in all our cases of Cholera Infantum," says Dr. I. G. Rey (*Deut. Med. Woch.*, 1897, No. 3.)

LARGIN

"Largin as an antgonorrheic surpasses other silver-albumin compounds with regard to the power of killing gonococci," says Dr. C. Pezzoli (*Wien. klin. Woch.*, XI., p. 286.)

DIONIN

"The most severe pains in iritis, ulcers, keratitis, and even glaucoma, may be reduced and relieved with Dionin," says Dr. A. Dairer (*Ophthalm. Klinik*, 1900, No. 7.)

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